Name Date Period

Place Value

EXAMPLE One digit has a line under it. What is its place value?

Write its place name. 4$\underline{6}$2 tens

Directions Write the place name for each underlined digit.

1. 54$\underline{7}$ _____

2. 2,$\underline{1}$38 _____

3. $\underline{1}$0,200 _____

4. 34,$\underline{5}$02 _____

5. 2,$\underline{3}$08 _____

6. 301,2$\underline{2}$1 _____

7. 30,$\underline{0}$41 _____

8. 90,$\underline{0}$00 _____

9. 7,541,$\underline{0}$00 _____

10. $\underline{1}$,001 _____

11. 8$\underline{3}$3 _____

12. 4,9$\underline{5}$0 _____

13. 90,78$\underline{8}$ _____

14. 3$\underline{9}$,400 _____

15. 203,$\underline{0}$01 _____

16. 500,$\underline{0}$00 _____

17. 41$\underline{1}$,305 _____

18. 2,$\underline{6}$72 _____

19. 3$\underline{9}$,211 _____

20. 2,$\underline{3}$11 _____

21. 60,1$\underline{2}$3 _____

22. 7,$\underline{6}$54,123 _____

23. 100,$\underline{0}$67 _____

24. $\underline{2}$03,004 _____

Directions Underline the digit of the place value given.

25. 361 ones

26. 100,345 ten-thousands

27. 201,045 tens

28. 40,567 thousands

29. 394,550 hundred-thousands

30. 678,994 hundreds

Name Date Period

Number Knowledge

EXAMPLE Read the numeral. Write the numeral in words.

745 seven hundred forty-five

Directions Write the name of the place for each underlined digit.

1. 1,<u>9</u>81 _____

2. 4<u>3</u>8 _____

3. 5,62<u>7</u> _____

4. 5<u>0</u>6,271 _____

5. 20,131,<u>6</u>60 _____

6. 6<u>0</u>,317 _____

7. <u>4</u>,058,225 _____

8. <u>3</u>7,620 _____

Directions Write each numeral in words.

9. 163 _____

_____

10. 127,426 _____

_____

11. 706,045 _____

_____

Directions Round the following numbers to the nearest:

	Tens		Hundreds		Thousands
12. 752	_____	**15.** 1,102	_____	**18.** 15,035	_____
13. 403	_____	**16.** 2,706	_____	**19.** 71,826	_____
14. 2,157	_____	**17.** 31,570	_____	**20.** 39,915	_____

Name Date Period

Addition of Whole Numbers

EXAMPLE Add.

$$\begin{array}{r} {\scriptstyle 1} \\ 45 \\ +\ 96 \\ \hline 141 \end{array}$$

Directions Add to find the sums.

1. 4 + 6	**6.** 85 + 22	**11.** 84 + 8	**16.** 52 + 9	**21.** 43 + 8
2. 5 + 3	**7.** 9 + 5	**12.** 78 + 45	**17.** 86 + 6	**22.** 59 + 6
3. 82 + 8	**8.** 82 + 5	**13.** 6 + 7	**18.** 84 + 22	**23.** 93 + 8
4. 35 + 3	**9.** 73 + 7	**14.** 23 + 4	**19.** 61 + 2	**24.** 85 + 34
5. 93 + 7	**10.** 48 + 7	**15.** 75 + 7	**20.** 22 + 3	**25.** 41 + 2

Directions Write the numbers in a vertical line. Then add.

26. 14, 70, 18

27. 16, 11, 22

28. 20, 30, 22

29. 3, 67, 82

30. 40, 18, 27, 5

Name Date Period

Addition and Subtraction

EXAMPLES

Add.

$$\begin{array}{r} {\scriptstyle 1} \\ 243 \\ 182 \\ +\ 4{,}100 \\ \hline 4{,}525 \end{array}$$

Subtract.

$$\begin{array}{r} {\scriptstyle 8\ 14} \\ \not{9}\not{4} \\ -\ 16 \\ \hline 78 \end{array}$$

Directions Write the numbers in vertical form. Then add.

1. 5 + 16 + 84 = _____

2. 7 + 48 + 763 = _____

3. 9,062 + 8,312 = _____

4. 23,071 + 7,062 + 95 = _____

Directions Rewrite the following subtraction problems in the vertical form. Then subtract.

5. 43 − 8 = _____

6. 556 − 362 = _____

7. 30,200 − 2,964 = _____

8. 71,302 − 853 = _____

9. 4,003 − 266 = _____

10. From 1,362 subtract 927. _____

11. From 7,823 subtract 957. _____

12. Subtract 378 from 4,763. _____

13. Subtract 5,861 from 9,003. _____

14. Subtract 2,100 from 7,568. _____

Directions Read the word problems. Solve them. Include the correct units in your answer.

15. Emma was in a mathematics contest. She did 60 addition problems. She did 15 multiplication problems. Then she did 28 division problems. How many problems did she do? _____

16. The class bought 2,000 sandwiches for the graduation party. There are 302 sandwiches left. How many were eaten? _____

Name Date Period

The Multiplication Table

×	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100

Name Date Period

Multiplication Practice

EXAMPLE

Look at the number in the left column.
Look at the number in the top row.
Multiply them.

	6
3	18

Directions Fill in the multiplication table. Multiply each number in the left column by numbers on the top row. Write the product in the box.

1.

×	10	9	8	7	6	5	4	3	2
9									
10									
2									
3									
6									
8									
5									
4									
1									

2.

×	8	6	1	4	2	5	0	3	7
6									
4									
0									
7									
1									
5									
3									
8									
2									

Name Date Period

Basic Operations with Whole Numbers

EXAMPLES

Add.
$$\begin{array}{r} {\scriptstyle 1\ 1} \\ 158 \\ 631 \\ 12 \\ +\ 210 \\ \hline 1{,}011 \end{array}$$

Subtract.
$$\begin{array}{r} {\scriptstyle 3\ 11\ 7\ 14} \\ \not{4}\not{,}\not{1}\not{8}\not{4} \\ -\ 678 \\ \hline 3{,}506 \end{array}$$

Multiply.
$$\begin{array}{r} 22 \\ \times\ 15 \\ \hline 110 \\ +\ 22 \\ \hline 330 \end{array}$$

Divide.
$$\begin{array}{r} 153 \\ 3\overline{)459} \\ -\ 3 \\ \hline 15 \\ -\ 15 \\ \hline 09 \\ -\ 9 \end{array}$$

Directions Add.

1. 812 + 498 + 319 = _____

2. 1,631 + 18 + 211 + 62 = _____

3. 608 + 2,021 + 5,084 = _____

4. 348 + 3,104 + 3,070 + 4,860 = _____

5. 50,603 + 7,006 + 30,200 + 1,021 = _____

6. 430,206 + 58,070 + 408,062 = _____

Directions Subtract.

7. 5,302 − 864 = _____

8. 74,311 − 19,516 = _____

9. 60,004 − 18,571 = _____

10. 320,042 − 48,139 = _____

11. 121,413 − 5,697 = _____

12. 300,060 − 137,502 = _____

Directions Multiply.

13. 42 × 33 = _____

14. 205 × 37 = _____

15. 402 × 106 = _____

16. 4,024 × 32 = _____

Directions Divide. Write the remainders as fractions.

17. 2,448 ÷ 6 = _____

18. 4,732 ÷ 7 = _____

19. 20,475 ÷ 5 = _____

20. 9,798 ÷ 23 = _____

Name Date Period

Multiplication and Division

EXAMPLES

Multiply.

$$\begin{array}{r} 62 \\ \times\ 19 \\ \hline 558 \\ +\ 62 \\ \hline 1{,}178 \end{array}$$

Divide.

$$\begin{array}{r} 285 \\ 7\overline{)1{,}995} \\ -\ 14 \\ \hline 59 \\ -\ 56 \\ \hline 35 \\ -\ 35 \end{array}$$

Directions Write these problems in vertical form. Then multiply.

1. $61 \times 6 =$ _____

2. $215 \times 25 =$ _____

3. $4{,}034 \times 300 =$ _____

Directions Rewrite the following division problems in standard form. Then divide. Write any remainders as fractions.

4. $366 \div 6 =$ _____

5. $5{,}463 \div 9 =$ _____

6. $2{,}520 \div 18 =$ _____

Directions Solve the word problems. Include the correct unit with your answer.

7. The high school makes 623 lunches every day. There are 180 school days in the year. How many lunches will the school make this year?

8. Lakeshore School has 462 students. There are 22 students in each class. How many classes are there at Lakeshore?

Name Date Period

Averages

EXAMPLE Find the average of these numbers: 16, 43, 22, 19, 58, 31

Step 1 Add.

$$\begin{array}{r} {\scriptstyle 2} \\ 16 \\ 43 \\ 22 \\ 19 \\ 58 \\ +\ 31 \\ \hline 189 \end{array}$$

Step 2 Divide.

$$\begin{array}{r} 31 \\ 6\overline{)189} \\ -\,18 \\ \hline 09 \\ -\ 6 \\ \hline 3 \end{array}$$

$\frac{3}{6} = \frac{1}{2}$, so the average is $31\frac{1}{2}$.

Directions Find the average of each set of numbers. Show remainders as fractions.

1. 28, 56, 62, 33 _____

2. 10, 20, 30 _____

3. 30, 44, 8 _____

4. 20, 34, 55, 31 _____

5. 20, 41, 34, 33 _____

6. 29, 33, 52 _____

7. 9, 10, 11, 12 _____

8. 91, 70, 10, 10 _____

9. 10, 11, 13, 14 _____

10. 30, 40, 44, 81 _____

11. 41, 42, 43, 44, 45 _____

12. 8, 18, 22, 12, 10 _____

13. 41, 90, 30, 40, 40 _____

14. 4, 5, 70, 10, 4, 6, 10 _____

15. 20, 10, 30, 100, 10, 10 _____

16. 20, 30, 40, 50, 60 _____

Directions Use a calculator. Find the averages for each set of numbers. Read the answers with one decimal place.

17. 321, 462, 365, 558, 419 _____

18. 31, 988, 47, 102, 79, 400 _____

19. 20,345, 30,004, 50,678 _____

20. 440, 345, 573, 577, 3,110, 5,678, 300 _____

Name Date Period

Exponents

EXAMPLE Read the number. Change the number into a problem. Write the amount.

$2^3 = 2 \times 2 \times 2 =$ 8

Directions Write the following without exponents.

1. 5^2 means _____

2. 3^4 means _____

3. 11^5 means _____

4. 5^7 means _____

5. 21^6 means _____

6. 8^1 means _____

7. 13^5 means _____

8. 15^3 means _____

9. 6^3 means _____

10. 6^6 means _____

11. 12^7 means _____

12. 23^4 means _____

13. 43^3 means _____

14. 7^8 means _____

15. 19^2 means _____

16. 13^3 means _____

Directions Write these expressions without exponents.

17. $2^4 =$ _____

18. $7^3 =$ _____

19. $12^4 =$ _____

20. $3^6 =$ _____

21. $17^2 =$ _____

22. $18^2 =$ _____

23. $4^8 =$ _____

24. $15^2 =$ _____

25. $17^3 =$ _____

26. $19^3 =$ _____

27. $25^3 =$ _____

28. $4^3 =$ _____

29. $8^3 =$ _____

30. $22^3 =$ _____

Name Date Period

Averages, Exponents, and Order of Operations

EXAMPLE Follow the order of operations. $2 + 4 \times 3 =$ _____

$2 + 12 =$ 13

Directions Find the average of each set of numbers.

1. 82, 91, 76, 85

Average _____

2. 265, 300, 298, 275, 246

Average _____

3. 75, 75, 76, 77, 82

Average _____

4. 128, 133, 98

Average _____

Directions Write each as a multiplication problem. Then find the product.

5. $11^4 =$ _____

6. $3^4 =$ _____

7. $10^4 =$ _____

8. $5^4 =$ _____

9. $91^2 =$ _____

10. $3^5 =$ _____

Directions Find the answers. Do the operations in the correct order.

11. $14 + 8 \times 2 =$ _____

12. $14 - 18 \div 2 + 1 =$ _____

13. $5^3 - 8 \times 2 =$ _____

14. $5^2 + 8^2 \div 16 =$ _____

15. $5^2 + 6 \times 6 \div 6^2 =$ _____

16. $4 + 8 \times 5 \div 2^2 - 6 =$ _____

Name Date Period

Factors

EXAMPLE

Factor the number.

F_{16} 1×16
2×8
4×4

Circle the correct factors.

(1), (2), 3, (4), 5, 6, 7, (8), 9, 10, 11, 12, 13, 14, 15, (16)

Directions Circle the factors for the given numbers.

1. 20
1, 2, 3, 4, 5, 6, 8, 9, 10, 12, 14, 16, 20

2. 6
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

3. 27
1, 2, 3, 4, 5, 6, 8, 9, 15, 27

4. 52
1, 2, 4, 6, 8, 13, 52, 104

5. 80
1, 2, 4, 5, 8, 10, 15, 20, 40, 80

6. 15
2, 3, 4, 5, 10, 15

7. 38
1, 2, 4, 6, 8, 9, 18, 19, 38

8. 29
1, 3, 13, 26, 29

9. 37
1, 3, 6, 7, 11, 30, 37

10. 26
1, 2, 13, 16, 26

11. 44
1, 2, 4, 11, 22, 33, 44, 88

12. 39
1, 3, 13, 26, 39

13. 75
1, 2, 5, 10, 15, 20, 25, 30, 40, 50, 75

14. 48
1, 2, 4, 6, 8, 10, 12, 16, 20, 24, 32, 48

15. 18
2, 3, 4, 6, 9, 12, 18, 36

16. 10
1, 2, 5, 6, 10, 20

17. 60
1, 2, 3, 4, 5, 6, 10, 15, 20, 25, 30, 50, 60

18. 40
1, 2, 4, 5, 6, 8, 10, 15, 20, 25, 30, 40

19. 33
1, 3, 5, 9, 11, 33

20. 25
1, 2, 5, 10, 15, 20, 25, 50

Name Date Period

Multiples

EXAMPLE M_2 Find the multiples of 2.

2×0	2×1	2×2	2×3	2×4
0	2	4	6	8

Circle the multiples.
1, (2), 3, (4), 5, (6), 7, (8), 9

Directions Circle the correct multiples for the given numbers.

1. 15
1, 5, 10, 15, 20, 30, 45, 55

2. 40
0, 20, 30, 40, 60, 80, 100, 120

3. 10
1, 5, 10, 15, 20, 25, 30

4. 11
0, 7, 11, 22, 33, 36, 72

5. 22
0, 1, 11, 22, 44, 111

6. 25
0, 50, 100, 125, 150, 225

7. 50
1, 25, 50, 75, 100, 125, 150

8. 13
0, 1, 13, 26, 32, 39

9. 17
0, 1, 17, 24, 51, 56

10. 8
0, 2, 4, 8, 10, 16, 32, 38

11. 3
1, 3, 6, 9, 10, 20, 30, 40

12. 6
0, 1, 2, 3, 6, 12, 18, 24

13. 12
0, 1, 12, 24, 32, 36, 144

14. 33
0, 1, 11, 22, 33, 44, 55

15. 21
0, 7, 14, 21, 28, 35, 42

16. 28
0, 1, 7, 14, 28, 56, 112

17. 14
1, 2, 7, 14, 21, 28, 30

18. 7
1, 7, 14, 20, 28, 30, 56

19. 4
0, 1, 2, 4, 8, 10, 16, 20

20. 2
0, 2, 4, 6, 7, 8, 10, 20

Prime and Composite Numbers

EXAMPLE

Identify all the factors. $F_3 = 1, 3$

Name the number as prime or composite.

3 has two factors. It is a prime number.

Directions Circle the prime numbers.

1. 9, 10, 3, 17

2. 2, 6, 23, 44

3. 33, 23, 25, 2

4. 33, 3, 303, 1

5. 55, 5, 6, 32

6. 120, 12, 4, 3

7. 34, 55, 71, 37

8. 5, 20, 2, 46

9. 8, 4, 7, 9, 11

10. 9, 200, 5, 7

11. 77, 7, 17, 6

12. 45, 23, 6, 8

13. 31, 34, 33, 4

14. 111, 15, 37, 4

15. 19, 20, 21, 22

16. 44, 65, 31, 5

17. 9, 3, 27, 80

18. 24, 44, 1, 6

Directions Circle the composite numbers.

19. 19, 8, 3, 2

20. 61, 62, 63, 64

21. 100, 31, 23, 40

22. 23, 24, 25, 29

23. 55, 66, 30, 12

24. 6, 60, 7, 70

25. 93, 39, 3, 9

26. 7, 22, 55, 5

27. 30, 3, 33, 7

28. 34, 46, 68, 67

29. 99, 35, 37, 47

30. 30, 5, 22, 56

31. 22, 34, 5, 7

32. 53, 54, 55, 56

33. 32, 31, 21, 1

Name Date Period

Sets of Numbers

EXAMPLE Find the set of even numbers. Even numbers are multiples of 2.

30, 31, 32, 33, 34, 35, 36, 37

Set of even numbers 30, 32, 34, 36

1. How many numbers in the set divide into 28 with no remainder? Write them.
(2, 3, 4, 5, 6, 7, 8, 9, 10)

_____

2. Write the numbers from the set given that divide into 75 without a remainder.
(5, 10, 20, 25, 30, 35, 40, 50, 60, 70, 75)

_____

3. Write the set of numbers that divides into 24 with no remainder.
(1, 2, 4, 6, 8, 10, 12)

_____

4. Use the set (2, 4, 6, 8, 10, 12, 18, 24, 25, 27). Write the multiples of 6.

_____

5. Use the set (12, 16, 20, 22, 25, 28, 30, 42, 50). Write the multiples of 4.

_____

6. Use the set (1, 2, 3, 4, 5, 12, 13, 14, 17, 20). Write the set of even numbers.

_____

7. Use the set (1, 2, 3, 4, 5, 6, 7, 17, 18, 20). Write the set of odd numbers.

_____

8. Use the set (0, 12, 24, 32, 48, 52, 60). Write the multiples of 12.

_____

Name Date Period

Hundred Chart: Finding Prime Numbers

Directions Use this chart to find prime numbers. See page 42 of the textbook.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Name Date Period

Divisibility Tests

EXAMPLE Use the divisibility test. Is this number divisible by 3?

177 Add the digits. 1 + 7 + 7 = 15

Determine if the sum is a multiple of 3. 15 is a multiple of 3.
177 is divisible by 3.

Directions Do divisibility tests. Complete the chart.
Write *Yes* or *No* for each space.

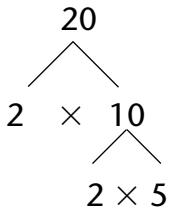
Number	Divisible By 2?	Divisible By 3?	Divisible By 5?	Divisible By 10?
1. 30,357				
2. 41,920				
3. 23,340				
4. 10,023				
5. 20,344				
6. 33,491				
7. 100,040				
8. 92,340				

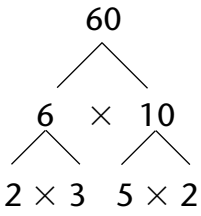
Number	Divisible By 2?	Divisible By 4?	Divisible By 9?	Divisible By 10?
9. 46,125				
10. 41,500				
11. 254,709				
12. 15,880				
13. 23,324				
14. 10,080				
15. 67,510				
16. 82,440				

Name Date Period

Prime Factorization

EXAMPLES





Directions Use factor trees to do the prime factorization of these composite numbers.

1. 30

2. 27

3. 72

4. 45

5. 24

6. 60

7. 48

8. 16

9. 17

Name Date Period

Least Common Multiple

EXAMPLE

Find the LCM (2, 5).

$M_2 = 2, 4, 6, 8, 10, 12$

$M_5 = 5, 10, 15, 20, 25$

LCM (2, 5) = 10

Directions Look at the pairs of numbers.
Find their least common multiple (LCM).
Show your work.

1.

LCM (7, 9)
$M_7 =$
$M_9 =$
LCM (7, 9) =

2.

LCM (3, 15)
$M_3 =$
$M_{15} =$
LCM (3, 15) =

3.

LCM (7, 4)
$M_7 =$
$M_4 =$
LCM (7, 4) =

4.

LCM (6, 11)
$M_6 =$
$M_{11} =$
LCM (6, 11) =

5.

LCM (6, 8)
$M_6 =$
$M_8 =$
LCM (6, 8) =

6.

LCM (5, 6)
$M_5 =$
$M_6 =$
LCM (5, 6) =

7.

LCM (4, 6)
$M_4 =$
$M_6 =$
LCM (4, 6) =

8.

LCM (11, 3)
$M_{11} =$
$M_3 =$
LCM (11, 3) =

Least Common Multiple/ Greatest Common Factor

EXAMPLES

LCM (5, 10)
$M_5 = \{0, 5, \underline{10}, 15 \ldots\}$
$M_{10} = \{0, \underline{10}, 20, \ldots\}$
LCM (5, 10) = 10

GCF (6, 12)
$F_6 = \{1, 2, 3, \underline{6}\}$
$F_{12} = \{1, 2, \underline{6}, 12\}$
GCF (6, 12) = 6

Directions Find the least common multiple of these pairs of numbers.

1. LCM (7, 8)

2. LCM (11, 2)

3. LCM (8, 24)

4. LCM (4, 18)

5. LCM (3, 8)

6. LCM (6, 14)

Directions Find the greatest common factor of these pairs of numbers.

7. GCF (15, 105)

8. GCF (16, 64)

9. GCF (21, 84)

10. GCF (18, 72)

11. GCF (12, 24)

12. GCF (28, 56)

Name Date Period

Finding Least Common Multiple and Greatest Common Factor

EXAMPLES

LCM (14, 6)

$14 = 2 \times 7$

$6 = 2 \times 3$

$2 \times 7 \times 3 = 42$

LCM = 42

GCF (14, 6)

$10 = 2 \times 7$

$6 = 2 \times 3$

GCF = 2

Directions Look at the pairs of numbers.
Find their least common multiple (LCM).
Show your work.

1. Find the LCM (6, 25)

2. Find the LCM (18, 4)

3. Find the LCM (7, 10)

4. Find the LCM (9, 8)

Directions Look at the pairs of numbers.
Find their greatest common factor (GCF).
Show your work.

5. GCF (15, 12)

6. GCF (9, 24)

7. GCF (14, 22)

8. GCF (25, 35)

Name Date Period

Comparing Fractions

EXAMPLE Cross-multiply numerators and denominators. Compare the products.

$\frac{2}{3} \quad \frac{6}{7}$ → $3 \times 6 = 18$

$\frac{2}{3} \quad \frac{6}{7}$ → $2 \times 7 = 14$

$\frac{14}{\frac{2}{3}} \quad \frac{18}{\frac{6}{7}}$

$14 < 18$

Directions Use the cross-product method. Write $=$, $<$, $>$ for each expression. Show your work.

1. $\frac{1}{8} \quad \frac{3}{18}$

2. $\frac{5}{11} \quad \frac{9}{16}$

3. $\frac{22}{32} \quad \frac{32}{41}$

4. $\frac{5}{11} \quad \frac{12}{23}$

5. $\frac{10}{13} \quad \frac{11}{14}$

6. $\frac{22}{34} \quad \frac{14}{25}$

7. $\frac{13}{26} \quad \frac{4}{8}$

8. $\frac{11}{15} \quad \frac{9}{10}$

9. $\frac{11}{14} \quad \frac{13}{15}$

10. $\frac{30}{45} \quad \frac{15}{28}$

11. $\frac{16}{22} \quad \frac{7}{8}$

12. $\frac{22}{23} \quad \frac{15}{16}$

13. $\frac{14}{20} \quad \frac{15}{22}$

14. $\frac{16}{20} \quad \frac{30}{40}$

15. $\frac{23}{24} \quad \frac{21}{22}$

16. $\frac{22}{25} \quad \frac{13}{14}$

Name Date Period

Changing Fractions to Higher Terms

EXAMPLE

Divide. Find out how many times one denominator goes into the other. Multiply the numerator and denominator by the quotient.

$\frac{2}{3} = \frac{\ }{15}$ Divide 15 by 3. $15 \div 3 = 5$

$\frac{2}{3} \times \frac{5}{5} = \frac{10}{15}$

$\frac{3}{4} = \frac{10}{15}$

Directions Express these fractions in higher terms.

1. $\frac{3}{8} = \frac{\ }{24}$

2. $\frac{7}{9} = \frac{\ }{27}$

3. $\frac{4}{9} = \frac{\ }{72}$

4. $\frac{12}{33} = \frac{\ }{99}$

5. $\frac{52}{55} = \frac{\ }{165}$

6. $\frac{11}{20} = \frac{\ }{60}$

7. $\frac{30}{31} = \frac{\ }{124}$

8. $\frac{4}{8} = \frac{\ }{32}$

9. $\frac{8}{9} = \frac{\ }{63}$

10. $\frac{5}{9} = \frac{\ }{45}$

11. $\frac{17}{19} = \frac{\ }{38}$

12. $\frac{18}{20} = \frac{\ }{100}$

13. $\frac{15}{30} = \frac{\ }{120}$

14. $\frac{7}{8} = \frac{\ }{24}$

15. $\frac{13}{23} = \frac{\ }{46}$

16. $\frac{6}{22} = \frac{\ }{44}$

17. $\frac{20}{25} = \frac{\ }{125}$

18. $\frac{7}{16} = \frac{\ }{32}$

19. $\frac{5}{13} = \frac{\ }{52}$

20. $\frac{4}{8} = \frac{\ }{40}$

Name Date Period

Fractions to Compare and Rename

EXAMPLE Express fractions in lowest terms. Divide the numerator and denominator by their largest common factor.

$$\frac{10}{12} = \frac{10 \div 2}{12 \div 2} = \frac{5}{6}$$

Directions Compare the fractions in each pair. Use < or >.

1. $\frac{3}{7}$ $\frac{5}{8}$

2. $\frac{9}{16}$ $\frac{3}{5}$

3. $\frac{5}{6}$ $\frac{6}{7}$

4. $\frac{5}{8}$ $\frac{7}{9}$

5. $\frac{4}{7}$ $\frac{7}{9}$

6. $\frac{2}{3}$ $\frac{9}{21}$

7. $\frac{4}{9}$ $\frac{6}{8}$

8. $\frac{4}{5}$ $\frac{7}{8}$

Directions Change these fractions to higher terms.

9. $\frac{5}{9} = \frac{\quad}{27}$

10. $\frac{6}{11} = \frac{\quad}{33}$

11. $\frac{16}{17} = \frac{\quad}{34}$

12. $\frac{7}{8} = \frac{\quad}{64}$

Directions Rename these fractions in simplest form.

13. $\frac{15}{20} =$ _____

14. $\frac{9}{51} =$ _____

15. $\frac{22}{46} =$ _____

16. $\frac{18}{24} =$ _____

Name Date Period

Mixed Numbers

EXAMPLE Rename $3\frac{3}{8}$ as an improper fraction.

$3 \times 8 = 24$ $24 + 3 = 27$ $3\frac{3}{8} = \frac{27}{8}$

Multiply the whole number by the denominator. Add the numerator. Write the new numerator over the same denominator.

Directions Write the mixed numbers as improper fractions.

1. $3\frac{7}{9} =$ _____

2. $2\frac{1}{4} =$ _____

3. $7\frac{5}{6} =$ _____

4. $27\frac{2}{3} =$ _____

5. $11\frac{2}{4} =$ _____

6. $12\frac{3}{5} =$ _____

Directions Rename these improper fractions as mixed numbers in simplest form.

7. $\frac{14}{5} =$ _____

8. $\frac{29}{6} =$ _____

9. $\frac{77}{10} =$ _____

10. $\frac{32}{9} =$ _____

11. $\frac{65}{8} =$ _____

12. $\frac{104}{100} =$ _____

Directions Rename these mixed numbers in simplest form.

13. $4\frac{32}{64} =$ _____

14. $5\frac{21}{4} =$ _____

15. $8\frac{12}{8} =$ _____

16. $7\frac{21}{56} =$ _____

Name Date Period

Renaming Improper Fractions

EXAMPLE

Divide the numerator by the denominator.
Write the fractions as mixed numbers.
Simplify if necessary.

$\frac{32}{10}$

$$\begin{array}{r} 3 \\ 10\overline{)\,32} \\ -\,30 \\ \hline 2 \end{array}$$

Solution: $3\frac{2}{10}$ or $3\frac{1}{5}$

Directions Write the improper fractions as whole or mixed numbers.

1. $\frac{16}{5}$ _____ **7.** $\frac{66}{22}$ _____ **13.** $\frac{85}{9}$ _____ **19.** $\frac{34}{17}$ _____

2. $\frac{46}{7}$ _____ **8.** $\frac{77}{66}$ _____ **14.** $\frac{26}{12}$ _____ **20.** $\frac{40}{13}$ _____

3. $\frac{39}{12}$ _____ **9.** $\frac{23}{12}$ _____ **15.** $\frac{47}{40}$ _____ **21.** $\frac{45}{3}$ _____

4. $\frac{40}{6}$ _____ **10.** $\frac{66}{9}$ _____ **16.** $\frac{67}{6}$ _____ **22.** $\frac{35}{15}$ _____

5. $\frac{29}{5}$ _____ **11.** $\frac{56}{8}$ _____ **17.** $\frac{34}{11}$ _____ **23.** $\frac{15}{2}$ _____

6. $\frac{45}{8}$ _____ **12.** $\frac{72}{10}$ _____ **18.** $\frac{17}{10}$ _____ **24.** $\frac{122}{121}$ _____

Name Date Period

Writing Mixed Numbers in Simplest Form

EXAMPLE Rename the mixed number in its simplest form.

$10\frac{21}{9} = 10 + \frac{21}{9} = 10 + 2\frac{3}{9} = 12\frac{3}{9} = 12\frac{1}{3}$

Directions Write these mixed numbers in simplest form.

1. $4\frac{19}{8}$ _____ **8.** $6\frac{8}{5}$ _____ **15.** $10\frac{3}{2}$ _____ **22.** $13\frac{9}{4}$ _____

2. $12\frac{28}{14}$ _____ **9.** $5\frac{53}{7}$ _____ **16.** $21\frac{7}{6}$ _____ **23.** $12\frac{32}{11}$ _____

3. $4\frac{18}{7}$ _____ **10.** $8\frac{12}{11}$ _____ **17.** $7\frac{8}{5}$ _____ **24.** $22\frac{9}{5}$ _____

4. $12\frac{3}{3}$ _____ **11.** $7\frac{13}{12}$ _____ **18.** $5\frac{34}{10}$ _____ **25.** $19\frac{15}{14}$ _____

5. $4\frac{20}{19}$ _____ **12.** $6\frac{36}{24}$ _____ **19.** $37\frac{23}{8}$ _____ **26.** $2\frac{21}{10}$ _____

6. $30\frac{43}{10}$ _____ **13.** $10\frac{17}{5}$ _____ **20.** $18\frac{34}{15}$ _____ **27.** $15\frac{26}{13}$ _____

7. $9\frac{13}{2}$ _____ **14.** $7\frac{22}{11}$ _____ **21.** $5\frac{15}{14}$ _____ **28.** $17\frac{42}{12}$ _____

Name Date Period

Multiplying Fractions

EXAMPLE Multiply numerators. Multiply denominators. Simplify if necessary.

$$\frac{7}{8} \times \frac{1}{14} = \frac{7 \times 1}{8 \times 14} = \frac{7}{112} = \frac{1}{16}$$

Directions Multiply these fractions. Simplify your answers.

1. $\frac{2}{3} \times \frac{5}{9}$ _____

2. $\frac{7}{8} \times \frac{2}{5}$ _____

3. $\frac{12}{26} \times \frac{13}{18}$ _____

4. $\frac{7}{9} \times \frac{2}{9}$ _____

5. $\frac{2}{7} \times \frac{5}{9}$ _____

6. $\frac{20}{6} \times \frac{6}{10}$ _____

7. $\frac{4}{14} \times \frac{7}{8}$ _____

8. $\frac{2}{15} \times \frac{5}{8}$ _____

9. $\frac{4}{3} \times \frac{12}{16}$ _____

10. $\frac{6}{8} \times \frac{8}{12}$ _____

11. $\frac{9}{10} \times \frac{4}{9}$ _____

12. $\frac{17}{6} \times \frac{10}{18}$ _____

13. $\frac{11}{12} \times \frac{15}{22}$ _____

14. $\frac{7}{3} \times \frac{7}{8}$ _____

15. $\frac{23}{25} \times \frac{2}{3}$ _____

Name Date Period

Multiplying Mixed Numbers

EXAMPLE Change mixed numbers to improper fractions. Multiply. Simplify if necessary.

$$2\frac{3}{8} \times \frac{2}{3} =$$

$$\frac{19}{8} \times \frac{2}{3} = \frac{38}{24} = 1\frac{14}{24} = 1\frac{7}{12}$$

Directions Multiply these mixed numbers. Show your work.

1. $2\frac{1}{2} \times 3\frac{1}{3}$

2. $4\frac{1}{8} \times 2\frac{2}{9}$

3. $2\frac{2}{3} \times 1\frac{3}{4}$

4. $\frac{3}{4} \times 1\frac{5}{6}$

5. $\frac{2}{7} \times 1\frac{3}{4}$

6. $2\frac{3}{4} \times 2\frac{1}{2}$

7. $1\frac{1}{2} \times 3\frac{1}{4}$

8. $2\frac{3}{4} \times \frac{3}{6}$

9. $1\frac{1}{2} \times 2\frac{3}{4}$

10. $\frac{3}{4} \times 2\frac{1}{2}$

11. $1\frac{1}{2} \times 3\frac{4}{5}$

12. $2\frac{2}{3} \times 3\frac{1}{2}$

Name Date Period

Dividing Fractions

EXAMPLE Invert the divisor. Multiply. Simplify if necessary.

$$\frac{4}{5} \div \frac{9}{10} =$$

$$\frac{4}{5} \times \frac{10}{9} = \frac{40}{45} = \frac{8}{9}$$

Directions Divide these fractions. Always invert the divisor. Show your work.

1. $\frac{5}{8} \div \frac{2}{5}$ _____

2. $\frac{3}{10} \div \frac{6}{13}$ _____

3. $\frac{5}{7} \div \frac{6}{8}$ _____

4. $\frac{1}{8} \div \frac{2}{4}$ _____

5. $\frac{11}{12} \div \frac{5}{6}$ _____

6. $\frac{3}{10} \div \frac{6}{15}$ _____

7. $\frac{3}{8} \div \frac{5}{6}$ _____

8. $\frac{11}{13} \div \frac{12}{26}$ _____

9. $\frac{3}{5} \div \frac{6}{7}$ _____

10. $\frac{9}{18} \div \frac{1}{9}$ _____

11. $\frac{10}{12} \div \frac{25}{24}$ _____

12. $\frac{9}{10} \div \frac{1}{5}$ _____

13. $\frac{3}{4} \div \frac{2}{7}$ _____

14. $\frac{7}{9} \div \frac{3}{9}$ _____

15. $\frac{3}{11} \div \frac{7}{22}$ _____

Name Date Period

Multiplying and Dividing Fractions

EXAMPLES

Multiply.

$\frac{4}{9} \times 1\frac{1}{9} =$

$\frac{4}{9} \times \frac{10}{9} = \frac{40}{81}$

Divide.

$3\frac{1}{6} \div \frac{1}{3} =$

$\frac{19}{2\cancel{6}} \times \frac{\cancel{3}^{1}}{1} = \frac{19}{2} = 9\frac{1}{2}$

Directions Multiply. Write your answers in simplest form.

1. $\frac{4}{9} \times \frac{2}{7} =$ _____

2. $\frac{9}{14} \times \frac{2}{3} =$ _____

3. $\frac{8}{9} \times \frac{15}{16} =$ _____

4. $\frac{11}{12} \times \frac{21}{33} =$ _____

5. $1\frac{1}{5} \times \frac{2}{3} =$ _____

6. $2\frac{3}{4} \times \frac{1}{2} =$ _____

7. $5\frac{2}{3} \times \frac{9}{10} =$ _____

8. $3\frac{1}{7} \times 1\frac{2}{3} =$ _____

Directions Divide. Write your answers in simplest form.

9. $\frac{3}{8} \div \frac{4}{9} =$ _____

10. $\frac{3}{4} \div \frac{6}{20} =$ _____

11. $\frac{7}{11} \div \frac{3}{3} =$ _____

12. $\frac{6}{7} \div \frac{15}{14} =$ _____

13. $2\frac{2}{5} \div \frac{12}{13} =$ _____

14. $1\frac{3}{5} \div \frac{8}{15} =$ _____

15. $3\frac{2}{5} \div 1\frac{1}{2} =$ _____

16. $1\frac{1}{2} \div 1\frac{1}{2} =$ _____

Name Date Period

Adding with Like Denominators

EXAMPLE Add numerators. Keep the denominator.

$$\begin{array}{r} \frac{4}{19} \\ +\frac{5}{19} \\ \hline \frac{9}{19} \end{array}$$

Directions Add these fractions and mixed numbers. Add the numerators when the denominators are the same.

1. $\frac{6}{11} + \frac{4}{11}$

2. $\frac{9}{17} + \frac{6}{17}$

3. $\frac{8}{17} + \frac{5}{17}$

4. $3\frac{4}{17} + 2\frac{5}{17}$

5. $4\frac{5}{19} + 2\frac{3}{19}$

6. $\frac{7}{9} + \frac{1}{9}$

7. $\frac{6}{13} + \frac{3}{13}$

8. $\frac{12}{23} + \frac{11}{23}$

9. $6\frac{8}{9} + 1\frac{1}{9}$

10. $3\frac{2}{8} + 5\frac{1}{8}$

11. $\frac{2}{5} + \frac{2}{5}$

12. $\frac{11}{16} + \frac{4}{16}$

13. $\frac{3}{8} + \frac{5}{8}$

14. $9\frac{3}{8} + 2\frac{6}{8}$

15. $1\frac{5}{9} + 5\frac{3}{9}$

Name Date Period

Adding with Unlike Denominators

EXAMPLE To add, find the least common multiple of the denominators. Raise the fraction to higher terms. Add.

$$\begin{array}{r} \frac{2}{3} \\ +\ \frac{1}{8} \\ \hline \end{array} \quad \begin{array}{c} = \\ = \end{array} \quad \begin{array}{r} \frac{16}{24} \\ +\ \frac{3}{24} \\ \hline \frac{19}{24} \end{array}$$

Directions Add these mixed numbers and fractions. Simplify your answers.

1. $\frac{5}{6} + \frac{5}{12}$

2. $\frac{1}{7} + \frac{3}{14}$

3. $5\frac{2}{7} + 2\frac{7}{11}$

4. $6\frac{2}{5} + 2\frac{8}{13}$

5. $3\frac{10}{66} + 4\frac{1}{3}$

6. $6\frac{1}{8} + 2\frac{3}{16}$

7. $3\frac{17}{35} + 1\frac{1}{7}$

8. $4\frac{5}{6} + 5\frac{2}{7}$

9. $1\frac{5}{9} + 5\frac{1}{4}$

10. $1\frac{2}{7} + 6\frac{1}{12}$

11. $9\frac{11}{12} + \frac{5}{24}$

12. $\frac{6}{11} + 4\frac{1}{7}$

13. $7\frac{3}{7} + 1\frac{2}{9}$

14. $8\frac{1}{6} + 2\frac{2}{7}$

15. $11\frac{8}{15} + 5\frac{1}{10}$

Name Date Period

Subtraction with Like Denominators

EXAMPLE Subtract numerators. Keep denominators. Simplify if necessary.

$$\begin{array}{r} \frac{7}{8} \\ -\ \frac{3}{8} \\ \hline \frac{4}{8} \end{array} \quad = \quad \frac{1}{2}$$

Directions Subtract these mixed numbers. Simplify your answers.

1. $1\frac{3}{4} - \frac{1}{4}$

2. $5\frac{9}{10} - \frac{2}{10}$

3. $10\frac{7}{10} - 4\frac{2}{10}$

4. $6\frac{9}{13} - 2\frac{3}{13}$

5. $7\frac{9}{12} - 1\frac{4}{12}$

6. $10\frac{11}{13} - 5\frac{10}{13}$

7. $12\frac{10}{17} - 11\frac{15}{17}$

8. $15\frac{16}{19} - 10\frac{12}{19}$

9. $13\frac{10}{13} - 12\frac{1}{13}$

10. $16\frac{11}{24} - 1\frac{6}{24}$

11. $7\frac{13}{14} - 1\frac{11}{14}$

12. $22\frac{17}{21} - 12\frac{12}{21}$

13. $31\frac{26}{27} - 21\frac{20}{27}$

14. $16\frac{11}{12} - 12\frac{4}{12}$

15. $18\frac{7}{15} - 10\frac{1}{15}$

Name Date Period

Subtraction with Unlike Denominators

EXAMPLE To subtract unlike denominators, find the least common multiple of the denominators. Raise the fraction to higher terms and subtract.

$$\begin{array}{r} 2\frac{1}{4} \\ -\,1\frac{1}{6} \\ \hline \end{array} \quad = \quad \begin{array}{r} 2\frac{3}{12} \\ -\,1\frac{2}{12} \\ \hline 1\frac{1}{12} \end{array}$$

Directions Subtract these mixed numbers. Simplify your answers.

1. $8\frac{2}{3} - \frac{1}{6}$

2. $4\frac{10}{33} - 2\frac{2}{11}$

3. $10\frac{15}{44} - 7\frac{2}{11}$

4. $21\frac{26}{27} - 2\frac{1}{2}$

5. $34\frac{14}{23} - 4\frac{1}{2}$

6. $\frac{12}{13} - \frac{3}{26}$

7. $20\frac{8}{9} - 14\frac{1}{5}$

8. $7\frac{13}{20} - 6\frac{1}{5}$

9. $32\frac{24}{35} - 19\frac{2}{3}$

10. $45\frac{27}{30} - 12\frac{1}{4}$

11. $5\frac{9}{14} - 2\frac{3}{7}$

12. $28\frac{17}{20} - 20\frac{4}{5}$

13. $19\frac{33}{34} - 4\frac{3}{17}$

14. $7\frac{18}{22} - 4\frac{2}{3}$

15. $9\frac{23}{26} - 5\frac{3}{4}$

Name Date Period

Adding and Subtracting Fractions

EXAMPLES Add or subtract.
Write your answers in simplest form.

$$\begin{array}{r} 4\frac{1}{8} \\ +\,1\frac{3}{4} \\ \hline \end{array} = \begin{array}{r} 4\frac{1}{8} \\ +1\frac{6}{8} \\ \hline 5\frac{7}{8} \end{array} \qquad \begin{array}{r} 1\frac{7}{10} \\ -\,\frac{1}{8} \\ \hline \end{array} = \begin{array}{r} 1\frac{28}{40} \\ -\,\frac{5}{40} \\ \hline 1\frac{23}{40} \end{array}$$

Directions Add. Write your answers in simplest form.

1. $\begin{array}{r} \frac{4}{21} \\ +\,\frac{17}{21} \\ \hline \end{array}$

2. $\begin{array}{r} \frac{7}{13} \\ +\,\frac{5}{13} \\ \hline \end{array}$

3. $\begin{array}{r} \frac{2}{9} \\ +\,\frac{1}{9} \\ \hline \end{array}$

4. $\begin{array}{r} 5\frac{2}{5} \\ +\,3\frac{3}{5} \\ \hline \end{array}$

5. $\begin{array}{r} 6\frac{1}{2} \\ +\,3\frac{2}{3} \\ \hline \end{array}$

6. $\begin{array}{r} 5\frac{2}{7} \\ +\,3\frac{2}{3} \\ \hline \end{array}$

Directions Subtract. Write your answers in simplest form.

7. $\begin{array}{r} \frac{7}{8} \\ -\,\frac{3}{8} \\ \hline \end{array}$

8. $\begin{array}{r} \frac{5}{11} \\ -\,\frac{3}{11} \\ \hline \end{array}$

9. $\begin{array}{r} \frac{13}{15} \\ -\,\frac{8}{15} \\ \hline \end{array}$

10. $\begin{array}{r} 4\frac{3}{4} \\ -\,2\frac{1}{5} \\ \hline \end{array}$

11. $\begin{array}{r} 6\frac{7}{8} \\ -\,3\frac{2}{7} \\ \hline \end{array}$

12. $\begin{array}{r} 8\frac{5}{15} \\ -\,2\frac{3}{4} \\ \hline \end{array}$

13. $\begin{array}{r} 9\frac{1}{6} \\ -\,2\frac{1}{9} \\ \hline \end{array}$

14. $\begin{array}{r} 4\frac{3}{5} \\ -\,2\frac{4}{5} \\ \hline \end{array}$

15. $\begin{array}{r} 5 \\ -\,2\frac{7}{13} \\ \hline \end{array}$

Name Date Period

Basic Operations with Fractions and Mixed Numbers

EXAMPLES

Add. Simplify if necessary.

$$\begin{array}{r} 2\frac{4}{11} \\ +\,6\frac{3}{11} \\ \hline 8\frac{7}{11} \end{array}$$

Subtract. Simplify if necessary.

$$\begin{array}{rcl} 2\frac{3}{4} & = & 2\frac{9}{12} \\ -\,1\frac{2}{3} & = & -1\frac{8}{12} \\ \hline & & 1\frac{1}{12} \end{array}$$

Multiply. Simplify if necessary.

$$\frac{2}{9} \times \frac{3}{4} = \frac{6}{36} = \frac{1}{6}$$

Divide. Simplify if necessary.

$$\frac{7}{10} \div \frac{4}{9} = \frac{7}{10} \times \frac{9}{4} = \frac{63}{40} = 1\frac{23}{40}$$

Directions Add.

1. $2\frac{1}{4} + 4\frac{1}{4} =$ _____

2. $6\frac{3}{5} + 2\frac{1}{5} =$ _____

3. $2\frac{1}{10} + \frac{3}{5} =$ _____

4. $3\frac{2}{7} + 1\frac{9}{14} =$ _____

5. $3\frac{5}{6} + 1\frac{1}{8} =$ _____

6. $4\frac{1}{9} + 2\frac{2}{3} =$ _____

Directions Subtract.

7. $2\frac{2}{3} - 1\frac{1}{6} =$ _____

8. $6\frac{7}{15} - 3\frac{1}{3} =$ _____

9. $3\frac{7}{10} - \frac{2}{5} =$ _____

10. $6\frac{5}{8} - \frac{2}{4} =$ _____

11. $38\frac{3}{5} - \frac{1}{9} =$ _____

12. $24\frac{5}{6} - 9\frac{7}{12} =$ _____

Directions Multiply.

13. $\frac{4}{9} \times \frac{3}{8} =$ _____

14. $\frac{7}{15} \times \frac{30}{42} =$ _____

15. $\frac{3}{4} \times \frac{2}{5} =$ _____

16. $175 \times 1\frac{1}{4} =$ _____

17. $1\frac{2}{3} \times 1\frac{1}{5} =$ _____

18. $2\frac{2}{3} \times 1\frac{1}{8} =$ _____

Directions Divide.

19. $\frac{5}{9} \div \frac{10}{27} =$ _____

20. $\frac{3}{8} \div \frac{9}{32} =$ _____

21. $\frac{8}{15} \div \frac{4}{5} =$ _____

22. $5\frac{1}{2} \div \frac{7}{8} =$ _____

23. $7\frac{1}{2} \div 4\frac{1}{2} =$ _____

24. $3\frac{1}{5} \div 6 =$ _____

Name Date Period

Place Value

EXAMPLE Look at the digit with the line under it. Write its place name.

4.6$\underline{3}$1 hundredths

Directions Write the name of the place for each underlined digit.

1. 0.0$\underline{2}$ _____

2. 4.$\underline{6}$131 _____

3. 12.01$\underline{1}$ _____

4. 9.0$\underline{0}$3 _____

5. 1023.9$\underline{1}$ _____

6. 20.0$\underline{1}$012 _____

7. 7.1$\underline{4}$314 _____

8. 45.6$\underline{7}$ _____

9. 0.00$\underline{2}$23456 _____

10. 0.002$\underline{3}$4 _____

11. 1.2034$\underline{5}$ _____

12. 801.0091$\underline{2}$ _____

13. 4.2$\underline{3}$1 _____

14. 51.$\underline{2}$341 _____

15. 34.01456 _____

16. 1.$\underline{2}$341 _____

17. 0.0230$\underline{5}$ _____

18. 0.$\underline{0}$2304 _____

19. 1.$\underline{1}$00002 _____

20. 112.398$\underline{2}$ _____

21. 3.$\underline{4}$45078 _____

22. 54.$\underline{1}$920 _____

23. 0.01012$\underline{3}$ _____

24. 2.000$\underline{0}$01 _____

Directions Underline the place value named.

25. 6.21111 ten-thousandths

26. 0.101021 thousandths

27. 5.055444 hundred-thousandths

28. 120.00023 hundred-thousandths

29. 1502.033 hundredths

30. 12.01 tenths

31. 1203.002345 hundred-thousandths

32. 1293.01 tenths

33. 300.003 thousandths

34. 345.000212 millionths

Name Date Period

Reading and Writing Decimals

EXAMPLE Start at the left. Write the word for the numerals. Use *and* to stand for the decimal point.

1.14 one and fourteen hundredths

Directions Write the following numerals in words.

1. 15.61 _____

2. 7.9 _____

3. 23.002 _____

4. 1.24 _____

5. 203.203 _____

6. 17.0231 _____

7. 67.0081 _____

8. 2.09 _____

9. 0.7 _____

10. 500.02061 _____

11. 456.01 _____

12. 4.0020 _____

13. 6.01 _____

14. 23.0102 _____

15. 102.009 _____

Name Date Period

Writing and Comparing Decimals

EXAMPLE Order numbers from least to greatest.

4.211	4.20	0.42	Least 0.42	4.2	Greatest 4.211

Directions Write the name of the place for each underlined digit.

1. 0.0<u>4</u>1 _____

2. 0.00<u>1</u>2 _____

3. 506.7<u>4</u>472 _____

4. 29.645<u>0</u>4 _____

5. <u>2</u>.2 _____

6. 2.3<u>3</u>044 _____

Directions Write the following numerals in words.

7. 2.46 _____

8. 5.9 _____

Directions Write a numeral for each.

9. Sixteen and thirty-six thousandths

_____

10. Three thousand and four hundred-thousandths

_____

Directions Arrange each set in order from least to greatest.

11. 1.2011	1.0211	0.122	_____	_____	_____
12. 0.912	0.844	0.099	_____	_____	_____
13. 0.6564	0.6549	0.6509	_____	_____	_____
14. 0.1010	0.1002	0.1022	_____	_____	_____
15. 0.0301	0.0300	0.3001	_____	_____	_____

Adding Decimals

EXAMPLE Write the problem in vertical form. Then add.

$6.5 + 2 + 0.18 + 15 =$

$$\begin{array}{r} 6.5 \\ 2. \\ 0.18 \\ +\ 15. \\ \hline 23.68 \end{array} \qquad \begin{array}{r} 6.50 \\ 2.00 \\ 0.18 \\ +\ 15.00 \\ \hline 23.68 \end{array}$$

Directions Write these decimal numerals vertically. Then add. Check your work. Use zeros for proper place value placement.

1. $1 + 6.21 + 0.12$

2. $9 + 6.1 + 2.31 + 0.1$

3. $3.44 + 0.1 + 5 + 2.4$

4. $20.1 + 5 + 0.7 + 77$

5. $20 + 6.02 + 2.1$

6. $0.06 + 9 + 2.3 + 2.41$

7. $0.034 + 6 + 23 + 4.5$

8. $2.003 + 52 + 6 + 3.58$

9. $3.5 + 0.6 + 3.0334$

10. $89 + 23.02 + 0.003$

11. $6.001 + 8 + 2 + 0.2$

12. $90.03 + 4 + 0.445$

Name Date Period

Rounding, Adding, and Subtracting Decimals

EXAMPLE Write the problem in vertical form. Then subtract.

$1.65 - 0.48 =$

$$\begin{array}{r} {\scriptstyle 5\ 15} \\ 1.\not{6}\not{5} \\ -\ 0.48 \\ \hline 1.17 \end{array}$$

Directions Round the following decimals to the nearest:

	Tenth	Hundredth	Thousandth
4.489	**1.** _____	**4.** _____	**7.** _____
2.16666	**2.** _____	**5.** _____	**8.** _____
9.17638	**3.** _____	**6.** _____	**9.** _____

Directions Rewrite the following in vertical form. Then add.

10. $4.2 + 1.21 + 6 =$ _____

11. $0.72 + 4.8 + 0.21025 =$ _____

12. $450 + 0.004 + 4.5 =$ _____

13. $2.36 + 0.99 + 54 + 3.4 =$ _____

14. $47.4 + 0.0394 + 4.05 =$ _____

15. $23.4 + 4 + 95.9 =$ _____

Directions Rewrite the following in vertical form. Then subtract.

16. $1.982 - 1.71802 =$ _____

17. $5.62 - 0.412 =$ _____

18. $0.1 - 0.01 =$ _____

19. $4.506 - 2.04 =$ _____

20. $0.12 - 0.0948 =$ _____

21. $45 - 0.708 =$ _____

Name Date Period

Multiplication of Decimals

EXAMPLE Write the problem in vertical form.
Then multiply. Remember the decimal point.

$1.5 \times 0.21 =$

$$\begin{array}{r} 1.5 \\ \times \quad .21 \\ \hline 15 \\ +\ 30 \\ \hline 0.315 \end{array}$$

Directions Rewrite the following problems in vertical form. Then multiply.

1. $1.62 \times 7.189 =$

2. $2.40 \times 0.51 =$

3. $0.694 \times 0.023 =$

4. $4.1602 \times 0.0003 =$

5. $16 \times 4.49 =$

6. $8 \times 0.402 =$

7. $0.402 \times 0.08 =$

8. $216.4 \times 3.013 =$

9. $2.3 \times 0.9 =$

10. $1.004 \times 0.71 =$

11. $0.879 \times 0.039 =$

12. $19.82 \times 3.14 =$

13. $0.7465 \times 1.934 =$

14. $3.05 \times 0.34 =$

15. $8{,}709 \times 0.038 =$

Name Date Period

Scientific Notation with Whole Numbers

EXAMPLE Write in scientific notation. $0.01243 = 0.\overset{1}{0}\overset{2}{1}.243 = 1.243 \times 10^{-2}$

Directions Express these numbers in scientific notation.

1. 15,921 = _____

2. 6,410 = _____

3. 87,100 = _____

4. 100,200 = _____

5. 39,100,000 = _____

6. 224,500 = _____

7. 0.0009 = _____

8. 0.00007 = _____

9. 0.00031 = _____

10. 0.12301 = _____

11. 0.00000056 = _____

12. 12.89 = _____

EXAMPLE Write in standard form. $3.10 \times 10^{-3} = 0.\overset{3}{0}\overset{2}{0}\overset{1}{3}10 = 0.00310$

Directions Express without exponents.

13. $2.3 \times 10^3 =$ _____

14. $2.01 \times 10^{-2} =$ _____

15. $9 \times 10^5 =$ _____

16. $5.7 \times 10^2 =$ _____

17. $8 \times 10^2 =$ _____

18. $2 \times 10^4 =$ _____

19. $2.3 \times 10^{-5} =$ _____

20. $4.02 \times 10^{-2} =$ _____

21. $5.6 \times 10^{-7} =$ _____

22. $4.44 \times 10^{-4} =$ _____

23. $6 \times 10^{-8} =$ _____

24. $8 \times 10^{-3} =$ _____

Name Date Period

Decimal Operations

EXAMPLES

Add.

$$\begin{array}{r} 1.6 \\ +\ 6.19 \\ \hline 7.79 \end{array}$$

Subtract.

$$\begin{array}{r} {\scriptstyle 4\ 10\ 10} \\ 5.\cancel{1}\cancel{0} \\ -\ 2.42 \\ \hline 2.68 \end{array}$$

Multiply.

$$\begin{array}{r} 2.2 \\ \times\ \ .5 \\ \hline 1.10 \end{array}$$

Divide.

$$\begin{array}{r} 11.54 \\ 6\overline{)69.24} \\ -\ 6 \\ \hline 09 \\ -\ 6 \\ \hline 32 \\ -\ 30 \\ \hline 24 \\ -\ 24 \end{array}$$

Directions Add.

1. $6 + 3.2 + 19 =$ _____

2. $1.8 + 5 + 0.2 =$ _____

3. $3.9 + 5 + 0.09 =$ _____

4. $82.4 + 4 + 0.077 =$ _____

5. $41.4 + 56 + 0.005 =$ _____

6. $4.5 + 1.1 + 4 =$ _____

Directions Subtract.

7. $5 - 3.1 =$ _____

8. $9 - 0.85 =$ _____

9. $12 - 0.03 =$ _____

10. $0.208 - 0.0999 =$ _____

11. $1 - 0.055 =$ _____

12. $5.1 - 3.56 =$ _____

Directions Multiply.

13. $4.1 \times 2.8 =$ _____

14. $4.56 \times 4.51 =$ _____

15. $0.112 \times 0.03 =$ _____

16. $5.6 \times 0.33 =$ _____

17. $45 \times 6.2 =$ _____

18. $0.21 \times 5.8 =$ _____

Directions Divide.

19. $60 \div 0.5 =$ _____

20. $428 \div 1.2 =$ _____

21. $42.9 \div 78 =$ _____

22. $24.44 \div 5.2 =$ _____

23. $7.392 \div 0.88 =$ _____

24. $112 \div 11.2 =$ _____

Name Date Period

Decimals to Fractions

EXAMPLE Write 0.5 as a fraction. Simplify if necessary.

$0.5 = \frac{5}{10} = \frac{1}{2}$

Directions Rewrite each decimal as a fraction or mixed number. Simplify the answers to the lowest terms.

1. 0.19	_____	**17.** 7.55	_____	**33.** 0.1	_____
2. 6.52	_____	**18.** 9.098	_____	**34.** 3.035	_____
3. 0.27	_____	**19.** 0.0342	_____	**35.** 10.55	_____
4. 5.34	_____	**20.** 1.85	_____	**36.** 0.111	_____
5. 2.355	_____	**21.** 0.23	_____	**37.** 5.072	_____
6. 0.0034	_____	**22.** 0.26	_____	**38.** 33.045	_____
7. 0.0045	_____	**23.** 0.99	_____	**39.** 1.0535	_____
8. 7.012	_____	**24.** 1.900	_____	**40.** 1.99	_____
9. 1.22	_____	**25.** 1.08	_____	**41.** 0.12	_____
10. 2.755	_____	**26.** 2.088	_____	**42.** 0.0045	_____
11. 7.2180	_____	**27.** 0.8	_____	**43.** 0.208	_____
12. 0.011	_____	**28.** 12.25	_____	**44.** 0.71	_____
13. 0.001	_____	**29.** 5.25	_____	**45.** 0.112	_____
14. 5.5	_____	**30.** 0.012	_____	**46.** 1.9201	_____
15. 0.95	_____	**31.** 5.0038	_____	**47.** 0.459	_____
16. 1.456	_____	**32.** 1.5	_____	**48.** 1.11	_____

Division of Decimals

EXAMPLE Write in standard form.
Move decimal. Divide $33.6 \div 0.6 =$

$$\begin{array}{r} 56 \\ 0.6\overline{)33.6} \\ -\ 30 \\ \hline 36 \\ -\ 36 \\ \hline 0 \end{array} \quad = 56$$

Directions Rewrite in standard form. Divide.

1. $6.15 \div 5 =$ _____

2. $0.24 \div 6 =$ _____

3. $13.26 \div 13 =$ _____

4. $0.6771 \div 0.061 =$ _____

5. $399 \div 1.9 =$ _____

6. $1{,}023.4 \div 0.34 =$ _____

7. $0.0076 \div 0.38 =$ _____

8. $3.171 \div 2.1 =$ _____

Directions Write each fraction as a decimal. Round to three places.

9. $\frac{2}{3} =$ _____

10. $\frac{7}{15} =$ _____

11. $\frac{4}{5} =$ _____

12. $\frac{11}{13} =$ _____

13. $\frac{3}{20} =$ _____

14. $\frac{4}{7} =$ _____

15. $\frac{9}{10} =$ _____

16. $\frac{8}{9} =$ _____

Name Date Period

Basic Operations with Decimals

EXAMPLES

Add.

$$\begin{array}{r} {\scriptstyle 1} \\ 3.1 \\ +\ 6.93 \\ \hline 10.03 \end{array}$$

Subtract.

$$\begin{array}{r} {\scriptstyle 7\ 12\ 16} \\ \not{8}.\not{3}\not{6} \\ -\ 0.48 \\ \hline 7.88 \end{array}$$

Multiply.

$$\begin{array}{r} 5.6 \\ \times\ \ .2 \\ \hline 1.12 \end{array}$$

Divide.

$$\begin{array}{r} 1.520 \\ 6\overline{)9.123} \\ -\ 6 \\ \hline 3\ 1 \\ -\ 3\ 0 \\ \hline 12 \\ -\ 12 \\ \hline 03 \end{array}$$

Directions Add.

1. 2.7 + 8.15 = _____

2. 71 + 3.92 + 0.125 = _____

3. 5.02 + 0.037 + 0.8 = _____

4. 0.0562 + 0.48 + 0.02724 = _____

5. 17 + 0.0862 + 4.082 = _____

6. 5.44 + 0.38 + 76.8 + 0.5 = _____

Directions Subtract.

7. 2.5 − 0.73 = _____

8. 60 − 0.56 = _____

9. 6.826 − 0.47 = _____

10. 3.8 − 0.4107 = _____

11. 38 − 29.38 = _____

12. 1 − 0.48 = _____

Directions Multiply.

13. 5.4 × 0.8 = _____

14. 12 × 2.3 = _____

15. 5.2 × 0.52 = _____

16. 1.204 × 0.012 = _____

17. 6.05 × 2.12 = _____

18. 3.61 × 0.214 = _____

Directions Divide. Round to the nearest thousandth.

19. 7.15 ÷ 5 = _____

20. 89.2 ÷ 12 = _____

21. 4.034 ÷ 1.2 = _____

22. 25 ÷ 0.6 = _____

23. 2.003 ÷ 3.1 = _____

24. 28.02 ÷ 1.3 = _____

25. 2 ÷ 0.7 = _____

26. 14 ÷ 16 = _____

Name Date Period

Writing Ratios

EXAMPLE Show all three ways of writing a ratio. Simplify fractions.

6:12 6 to 12 $\frac{6}{12} = \frac{1}{2}$

Directions Show all three ways of writing ratios. Simplify fractions.

1. 2:3 = _____

2. 7:9 = _____

3. 10:11 = _____

4. 15:17 = _____

5. 22:44 = _____

6. 4:5 = _____

7. 7:8 = _____

8. 4:10 = _____

Directions Count the number of each letter below. Write the ratios.

A B C A C B C C A B B A A C A B B A
C A C E C E C E C A E A E B A E A C
B E A A D A D E D E C D E A D C E A

9. Write the ratio of A's to all letters. _____

10. Write the ratio of A's to E's. _____

11. Write the ratio of A's to D's. _____

12. Write the ratio of B's to C's. _____

13. Write the ratio of B's to D's. _____

14. Write the ratio of C's to D's. _____

15. Write the ratio of B's to A's. _____

16. Write the ratio of C's to A's. _____

17. Write the ratio of E's to D's. _____

18. Write the ratio of E's to C's. _____

19. Write the ratio of E's to A's. _____

20. Write the ratio of C's to E's. _____

Name Date Period

Identifying Proportions

EXAMPLE Cross-multiply. Compare the products.

$\frac{2}{3}$ $\frac{4}{6}$ $2 \times 6 = 12$ $3 \times 4 = 12$ $\frac{2}{3} = \frac{4}{6}$

Directions Cross-multiply. Determine if the two fractions are proportional. Write = or ≠ for each pair.

1. $\frac{4}{9}$ $\frac{6}{13}$

2. $\frac{5}{6}$ $\frac{30}{36}$

3. $\frac{8}{9}$ $\frac{40}{45}$

4. $\frac{3}{10}$ $\frac{21}{30}$

5. $\frac{1}{7}$ $\frac{19}{133}$

6. $\frac{9}{16}$ $\frac{27}{48}$

7. $\frac{14}{23}$ $\frac{16}{25}$

8. $\frac{9}{7}$ $\frac{7}{9}$

9. $\frac{7}{8}$ $\frac{11}{12}$

10. $\frac{4}{5}$ $\frac{20}{25}$

11. $\frac{11}{22}$ $\frac{33}{55}$

12. $\frac{23}{46}$ $\frac{41}{80}$

13. $\frac{11}{22}$ $\frac{33}{44}$

14. $\frac{7}{58}$ $\frac{15}{16}$

15. $\frac{12}{7}$ $\frac{84}{49}$

Name Date Period

Ratios and Proportions

EXAMPLE

Cross-multiply. Divide.

$\frac{n}{21} = \frac{2}{7}$

$7n = 21 \times 2$
$7n = 42$
$n = 42 \div 7$
$n = 6$

Directions Write a ratio to compare each of the following. Write the answer in simplest form.

1. 350 miles to 5 hours _____

2. 1 dime to 5 pennies _____

3. 35 minutes to 2 hours _____

4. $5.45 per hour _____

5. 12 cans for 96¢ _____

6. 8 oranges for $1.00 _____

7. 1 nickel and 2 pennies to 2 dimes _____

8. 6 hits for 8 times at bat _____

Directions Solve for the missing number.

9. $\frac{9}{n} = \frac{18}{22}$ _____

10. $\frac{n}{6} = \frac{24}{12}$ _____

11. $\frac{27}{12} = \frac{36}{n}$ _____

12. $\frac{8}{15} = \frac{n}{20}$ _____

13. $\frac{7}{8} = \frac{6}{n}$ _____

14. $\frac{9}{n} = \frac{1.8}{20}$ _____

15. $\frac{4.5}{9} = \frac{11}{n}$ _____

16. $\frac{7.2}{n} = \frac{8}{1.6}$ _____

17. $\frac{1.2}{4} = \frac{n}{3.5}$ _____

18. $\frac{57}{n} = \frac{19}{3.4}$ _____

19. $\frac{4\frac{1}{2}}{3} = \frac{n}{14}$ _____

20. $\frac{2\frac{1}{3}}{3} = \frac{n}{4\frac{1}{2}}$ _____

Name Date Period

Using Proportions

EXAMPLE Cross-multiply. Divide.

$\frac{6}{n} = \frac{15}{30}$

$15n = 6 \times 30$
$15n = 180$
$n = 180 \div 15$
$n = 12$

Directions Write ratios for the following.

1. 4 lb of potatoes to 3 lb of onions _____

2. 14 books to 1 shelf _____

3. 8 quarters to 2 dollars _____

4. 12 quarters to 3 dollars _____

5. 15 cans of soup to 20 empty bowls _____

Directions Cross-multiply. Express answers in fractional form.

6. $\frac{5}{8} = \frac{n}{16}$ _____

7. $\frac{6}{15} = \frac{n}{60}$ _____

8. $\frac{n}{8} = \frac{9}{36}$ _____

9. $\frac{3}{5} = \frac{n}{16}$ _____

Directions Write proportions. Cross-multiply to solve. Round to the nearest tenths place.

10. Jared's car gets 25 miles per 1 gallon of gasoline on the highway. How many gallons will he need to drive 63 miles?

_____

11. Laura painted her room with 2 quarts of blue paint. To paint 5 rooms of the same size, how many quarts of paint will she need?

_____

12. Jules can type 150 words per 4 minutes. How many words can he type in 12 minutes? How many in 60 minutes?

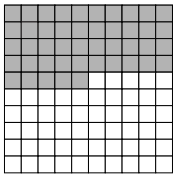
_____

Name Date Period

Meaning of Percent with Shading

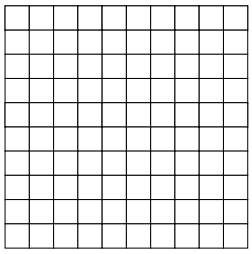
EXAMPLE Shade the boxes to show percent.

45% = 45 out of 100. Shade 45 boxes.

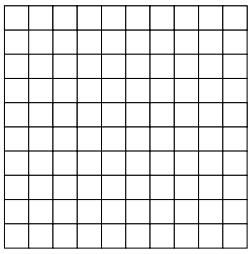


Directions Shade these percents.

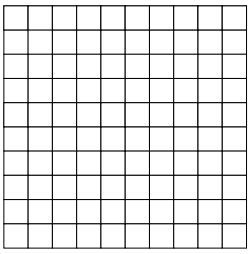
1. 15%



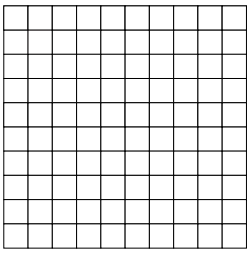
4. 44%



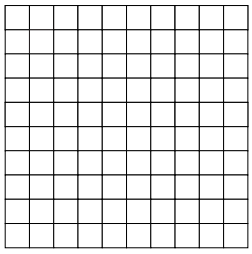
7. 81%



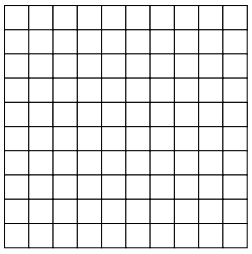
10. 55%



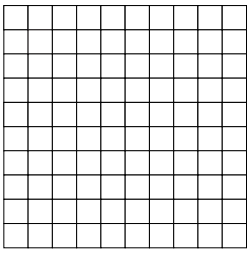
2. 92%



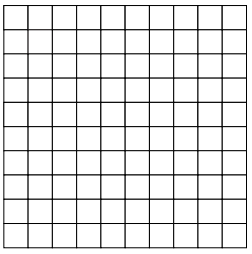
5. 43%



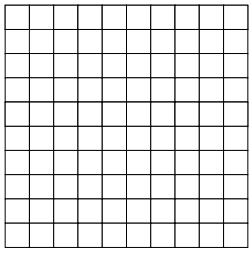
8. 6%



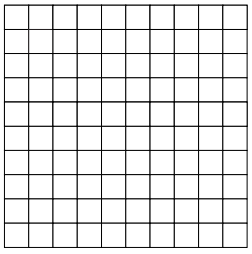
11. 27%



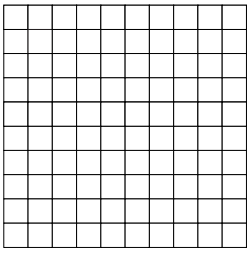
3. 31%



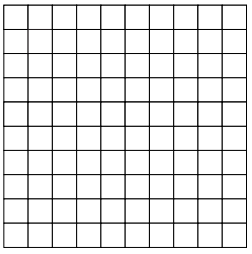
6. 16%



9. 3%



12. 88%



Name Date Period

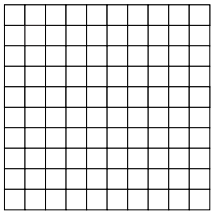
Changing Percents to Decimals and Fractions

EXAMPLES

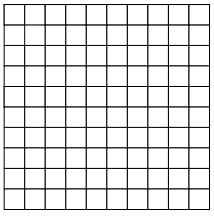
Percent as decimal	Percent as fraction
Drop percent sign. Add decimal point.	Drop percent sign. Write number as numerator over 100. Simplify if necessary.
$25\% = 0.25$	$25\% = \frac{25}{100} = \frac{1}{4}$

Directions Shade and write the percents as fractions and decimals.

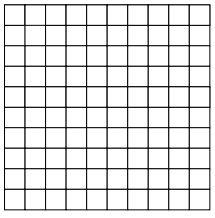
1. 33% _____



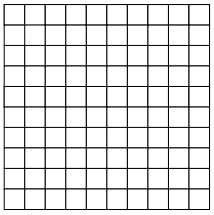
2. 42% _____



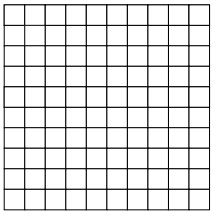
3. 58% _____



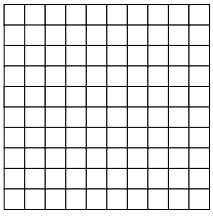
4. 95% _____



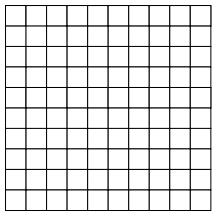
5. 72% _____



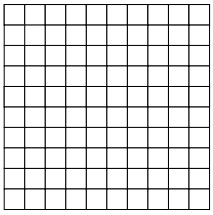
6. 54% _____



7. 59% _____



8. 6% _____



Name Date Period

Renaming Fractions and Decimals as Percents

EXAMPLE Rename 0.62 as percent.

Move decimal two places to the right.
Add the percent symbol.
0.62 = 62%

Directions Rename these decimals as percents.

1. 0.14	_____	**8.** 0.34	_____	**15.** 0.113	_____
2. 0.521	_____	**9.** 0.55	_____	**16.** 0.234	_____
3. 0.003	_____	**10.** 0.131	_____	**17.** 0.821	_____
4. 0.4	_____	**11.** 0.83	_____	**18.** 0.05	_____
5. 0.581	_____	**12.** 0.006	_____	**19.** 0.561	_____
6. 0.2	_____	**13.** 0.50	_____	**20.** 0.267	_____
7. 0.07	_____	**14.** 0.891	_____	**21.** 0.058	_____

EXAMPLE Express the fraction as a decimal and as a percent.

Divide numerator by denominator.

$$5\overline{)4.0}\quad .8$$
$$40$$

$\frac{4}{5}$

$\frac{4}{5} = 0.8 = 80\%$

Directions Express these fractions as decimals and percents.

22. $\frac{6}{7}$	_____	**26.** $\frac{6}{8}$	_____	**30.** $\frac{90}{100}$	_____
23. $\frac{20}{25}$	_____	**27.** $\frac{12}{30}$	_____	**31.** $\frac{52}{60}$	_____
24. $\frac{26}{30}$	_____	**28.** $\frac{30}{40}$	_____	**32.** $\frac{75}{80}$	_____
25. $\frac{4}{9}$	_____	**29.** $\frac{6}{10}$	_____	**33.** $\frac{62}{70}$	_____

Name Date Period

Major Elements of a Percent Sentence

EXAMPLES

	Rate	Base	Percentage
12% of what number is 92?	12%	*n*	92
300 is what percent of 1,500?	*n*	1,500	300

Directions Identify the rate, base, and percentage.
Use the letter *n* to represent a missing value.

	Rate	Base	Percentage
1. 15% of 45 is what number?			
2. 20% of what number is 70?			
3. What percent of 50 is 30?			
4. 40 is what percent of 90?			
5. What percent of 120 is 40?			
6. What number is 80% of 120?			
7. 75% of what number is 45?			
8. 90% of 120 is what number?			
9. 9% of 89 is what number?			
10. 20% of what number is 65?			
11. What percent of 30 is 15?			
12. 25% of 250 is what number?			
13. 150% of 80 is what number?			
14. 2% of what number is 18?			
15. 45% of 200 is what number?			

Name Date Period

Finding the Percentage

EXAMPLE 15% of 92 is _____

$15\% \text{ of } 92 = n$
$0.15 \times 92 = n$
$13.8 = n$

Directions Find these percentages.

1. 33% of 27 is _____
2. 19% of 222 is _____
3. 7% of 170 is _____
4. 28% of 0.6 is _____
5. 2.5% of 60 is _____
6. 75% of 350 is _____
7. 5.2% of 40 is _____
8. 72% of 75 is _____
9. *n* is 40% of 20 _____
10. 0.3% of 500 is _____
11. 72% of 60 is _____
12. 88% of 34 is _____
13. 3.5% of 200 is _____
14. 4% of 78 is _____
15. 80% of 60 is _____
16. 1% of 62 is _____
17. 19% of 91 is _____
18. 1.5% of 80 is _____
19. *n* is 4.1% of 50 _____
20. 0.5% of 450 is _____

Directions Find the percentages.

21. What number is 35% of 612? _____
22. What number is 1.7% of 68? _____
23. What number is 0.1% of 3,000? _____
24. What number is 13% of 110? _____
25. What number is 8% of 66? _____

Finding the Base

EXAMPLE 20% of n is 100

0.20 of n is 100
$0.20 \times n = 100$
$n = 100 \div 0.20$
$n = 500$

Directions Find the base in each of these percent sentences. The bases will be whole numbers.

1. 15% of n is 75 _____

2. 7% of n is 42 _____

3. 30% of n is 21.6 _____

4. 25% of n is 119 _____

5. 16% of n is 5.6 _____

6. 4% of n is 3.8 _____

7. 20% of n is 92 _____

8. 80% of n is 36 _____

9. 15% of n is 11.4 _____

10. 34% of n is 34 _____

11. 80% of n is 368 _____

12. 95% of n is 190 _____

13. 30% of n is 14.4 _____

14. 80% of n is 280 _____

15. 46% of n is 437 _____

16. 50% of n is 165 _____

17. 19% of n is 8.74 _____

18. 65% of n is 33.8 _____

19. 80% of n is 8 _____

20. 6% of n is 54 _____

21. 10% of n is 85 _____

22. 3% of n is 7.5 _____

23. 8% of n is 2.8 _____

24. 14% of n is 7.9 _____

25. 50% of n is 14 _____

26. 75% of n is 36 _____

27. 10% of n is 62.1 _____

28. 40% of n is 160 _____

Name Date Period

Percent Sentences

EXAMPLES

Percentage	Base	Rate
25% of 50 is _____	25% of _____ is 40	_____ % of 36 is 6
25% of 50 = n	25% × n = 40	n% × 36 = 6
0.25 × 50 = 12.5	0.25n = 40	n × 0.36 = 6
	n = 40 ÷ 0.25	n = 6 ÷ 0.36
	n = 160	n = 16.66%

Directions Solve for the percentage.

1. 13% of 39 is _____

2. 92% of 100 is _____

3. 70% of 80 is _____

4. 45% of 28 is _____

5. 40% of 60 is _____

6. 60% of 15 is _____

7. 17% of 82 is _____

8. 20% of 240 is _____

Directions Solve for the base.

9. 18% of _____ is 16

10. 70% of _____ is 25

11. 15% of _____ is 12

12. 48% of _____ is 67.2

13. 64% of _____ is 32

14. 19% of _____ is 57

15. 60% of _____ is 33

16. 20% of _____ is 14.5

Directions Solve for the rate.

17. _____ % of 52 is 9

18. _____ % of 80 is 30

19. _____ % of 3.5 is 1.4

20. _____ % of 45 is 3.06

21. _____ % of 65 is 2.6

22. _____ % of 45 is 2.97

23. _____ % of 70 is 11.2

24. _____ % of 14 is 11.2

Name Date Period

Working with Percents

EXAMPLES

Percentage	Base	Rate
25% of 80 is _____	25% of _____ is 17	_____ % of 70 is 7
25% of 80 = n	25% × n = 17	n% × 70 = 7
0.25 × 80 = n	0.25 n = 17	n × 0.70 = 7
20 = n	n = 68	n = 7 ÷ 0.70
		n = 10%

Directions Solve for the percentage.

1. 20% of 16 is _____

2. _____ is 40% of 82

3. _____ is 24% of 125

4. 16% of 45 is _____

5. _____ is $7\frac{1}{2}$% of 80

6. $12\frac{1}{2}$% of 72 is _____

Directions Solve for the base.

7. 10% of _____ is 20

8. 42 is 6% of _____

9. 4.5% of _____ is 36

10. 7.5 is 12% of _____

11. 20% of _____ is $2\frac{1}{2}$

12. $6\frac{2}{3}$% of _____ is 12

Directions Solve for the rate.

13. _____ % of 24 is 12

14. 7 is _____ % of 63

15. 9 is _____ % of 36

16. _____ % of 56 is 7

17. 15 is_____ % of 8

18. 18 is _____ % of 27

Directions Complete each percent sentence.

19. _____ % of 28 is 14

20. 11% of _____ is 44

21. _____ is 2% of 90

22. _____ is 45% of 60

23. $2\frac{1}{2}$ is 35% of _____

24. 21 is _____ % of 24

Name Date Period

Using Proportions

EXAMPLES

$n\%$ of 40 is 30

$$\frac{n}{100} = \frac{30}{40}$$
$$100 \times 30 = 40n$$
$$\frac{3{,}000}{40} = \frac{40n}{40}$$
$$75\% = n$$

5% of 40 = n

$$\frac{5}{100} = \frac{n}{40}$$
$$100n = 5 \times 40$$
$$\frac{100n}{100} = \frac{200}{100}$$
$$n = 2$$

Directions Solve these proportions.

1. $\frac{n}{100} = \frac{32}{128}$

2. $\frac{30}{100} = \frac{n}{60}$

3. $\frac{8}{100} = \frac{40}{n}$

4. $\frac{5}{100} = \frac{50}{n}$

Directions Write proportions. Solve for the missing value.

5. 25% of $n = 6$ _____

6. 5% of $150 = n$ _____

7. $n\%$ of $36 = 16.2$ _____

8. 34% of $n = 18.7$ _____

9. 8% of n is 8 _____

10. 90% of 70 is n _____

11. $n\%$ of $48 = 7.2$ _____

12. $n\%$ of $72 = 2.16$ _____

13. 62% of $n = 50$ _____

14. 8% of $22 = n$ _____

15. $n\%$ of $28 = 14$ _____

16. 5% of $n = 3.6$ _____

Discount

EXAMPLE Find the discount and sale price. Discount rate is 25%. List price is $1,000.00.

Step 1
$1,000.00 list price
× .25
$250.00 discount

Step 2
$1,000.00 list price
− 250.00 discount
$750.00 sale price

Directions Find the products and round answers to the nearest cent.

1. $14.98
× .34

2. $4.50
× .20

3. $40.00
× .20

4. $175.99
× .15

5. $29.95
× .10

6. $39.50
× .20

Directions Solve these discount problems.

7. Sasha bought a computer. It had a list price of $1,250.00. How much will he pay with a 15% discount? _____

8. Music CDs cost $25.00. How much will Lauren pay with a discount of 25%? _____

9. Megan purchases tennis balls with a list price of 6 for $20.00. How much will she pay with a 12% discount? _____

10. $300.00 list price
Discount rate 15%
Discount _____
Sale price _____

11. $770.00 list price
Discount rate 30%
Discount _____
Sale price _____

12. VCR list $99.00
Discount rate 10%
Discount _____
Sale price _____

13. $795.00 list price
Discount rate 30%
Discount _____
Sale price _____

14. $550.00 list price
Discount rate 15%
Discount _____
Sale price _____

15. $850.00 list price
Discount rate 25%
Discount _____
Sale price _____

Name Date Period

Sales Tax

EXAMPLE Multiply to compute sales tax.

7% tax on $9.00
7% × 9.00 =
0.07 × 9.00 = $0.63

Directions Compute the sales tax. Remember to round up to the nearest cent. Show steps.

1. $17.00 at 6.5%

2. $22.50 at 8%

3. $1.03 at 5%

4. $82.46 at 7%

5. $48.00 at 6%

6. $475.00 at 5%

7. $32.55 at 6%

8. $7.75 at 8%

9. $40.45 at 8%

10. $19.95 at 6%

11. $2,485.00 at 5%

12. $1.01 at 5%

13. $29.95 at 6%

14. $104.00 at 6%

15. $470.00 at 6%

16. $1.99 at 7%

17. $9.82 at 5%

18. $65.71 at 5%

19. $300.00 at 6%

20. $39.95 at 6%

21. $1.20 at 5%

Name Date Period

Simple Interest

EXAMPLES Compute the simple interest. The principal is $400.00. The interest rate is 7% for 2 years.

$400.00 principal
× .07
$28.00 interest for 1 year

$28.00 interest for one year
× 2 years
$56.00 interest for 2 years

Compute the simple interest on $200. The rate is 6% for 8 months.

$200.00 principal
× .06
$12.00 interest for 1 year

$\frac{\$12}{1} \times \frac{8}{12}$ ← Write 8 months over 12 months to express time as years.

$\frac{12}{1} \times \frac{8}{12} = \frac{96}{12} = 8$

$8.00 is the interest for 8 months

Directions Compute the simple interest. Show work.

1. $468.00 at 10% for 2 years

_____

2. $556.00 at 10% for 8 months

_____

3. $48.00 at 9% for 6 months

_____

4. $2,830.00 at 6% for 7 years

_____

5. $280.00 at 10% for 6 months

_____

6. $5,600.00 at 11% for 6 years

_____

7. $3,000.00 at 7% for 2 years

_____

8. $410.00 at 7% for 6 months

_____

9. $2,775.00 at 7% for 9 months

_____

10. $9,000.00 at 5% for 10 years

_____

11. $200.00 at 7% for 3 years

_____

12. $7,200.00 at 6% for 9 months

_____

Name Date Period

Installment Buying

EXAMPLE

Step 1		Step 2		Step 3	
$100.00	previous balance	$100.00	previous balance	$101.50	
× .015	finance rate	+ 1.50	finance charge	− 10.00	
$1.50	finance charge	$101.50		$91.50	new balance

New balance before first payment

Directions Liah buys a $1,000.00 computer on the installment plan. She pays a monthly finance charge of $1\frac{1}{2}\%$. Fill in the chart to show how she will pay for the television if she pays $100.00 per month. Round finance charges to the nearest cent.

Month	Previous Balance	Finance Charge	Before Payment	Monthly Payment	New Balance
January	$1,000.00	$15.00	$1,015.00	$100.00	$915.00

Total paid = Finance charges _____ + Original balance _____ = _____

Computing Commission

EXAMPLES Jackson receives 5% commission on sales of $500.00. How much will he receive?

$500.00 sales
× .05 commission rate
$25.00 commission

Rosa receives a 4% commission on all sales over $3,000.00 and her total sales are $7,000.00. How much will she receive?

$7,000.00 total sales
− $3,000.00 minimum on sales
$4,000.00

Compute commission on this amount

$4,000.00
× 0.04 commission rate
$160.00 commission

Rosa receives $160.00 commission.

Directions Compute the commission on each sale.

1. Sales amount $10,000.00
Commission rate 5%
Commission _____

2. Sales amount $2,500.00
Commission rate 4%
Commission _____

3. Sales amount $5,670.00
Commission rate 6% over $2,000.00
Commission _____

4. Sales amount $8,000.00
Commission rate 5% over $2,000.00
Commission _____

5. Sales amount $7,200.00
Commission rate 4%
Commission _____

6. Sales amount $5,600.00
Commission rate 7%
Commission _____

7. Sales amount $7,000.00
Commission rate 7% over $1,500.00
Commission _____

8. Sales amount $9,100.00
Commission rate 5% over $2,500.00
Commission _____

Tips

EXAMPLE Compute a 15% tip on a meal that cost $36.50. Give the total cost.

$36.50 meal cost
× 0.15 tip rate
18250
3650
$5.4750 round to nearest cent
$5.48 rounded to nearest cent

$36.50 cost of meal
+ $5.48 tip
$41.98 total

Directions Compute the tip for each meal. Use 15% as a tip rate. Give the total cost.

1. Meal cost $25.00
Tip _____
Meal total _____

3. Meal cost $7.89
Tip _____
Meal total _____

5. Meal cost $7.50
Tip _____
Meal total _____

2. Meal cost $7.50
Tip _____
Meal total _____

4. Meal cost $5.75
Tip _____
Meal total _____

6. Meal cost $8.45
Tip _____
Meal total _____

Directions Sometimes tips are rounded to the nearest dollar. An example is round $4.89 to $5.00. Compute the tips at 15%. Round these tips to the nearest dollar. Give total cost.

7. Meal cost $4.10
Tip _____
Meal total _____

9. Meal cost $11.45
Tip _____
Meal total _____

11. Meal cost $8.25
Tip _____
Meal total _____

8. Meal cost $16.50
Tip _____
Meal total _____

10. Meal cost $4.80
Tip _____
Meal total _____

12. Meal cost $21.50
Tip _____
Meal total _____

Name Date Period

Points, Lines, and Angles

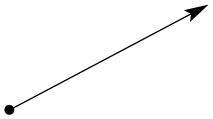
EXAMPLE Make a construction to represent $\overrightarrow{BC}$.

B C or C B

Rays can be drawn from either direction.
The beginning point must be *B* as indicated with $\overrightarrow{BC}$.

Directions Name these constructions.

1.



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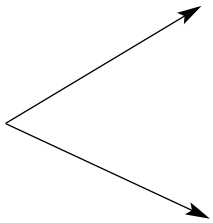


2.

4.

Directions Use the baselines provided to construct the following geometric constructions.

5. $\overrightarrow{XY}$

7. Vertex *H*

6. $\angle FGH$

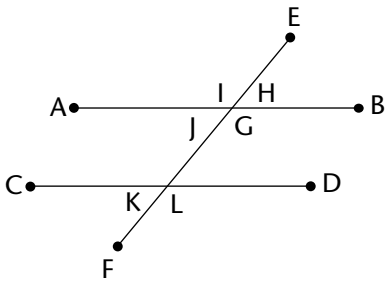
8. $\overline{AB}$

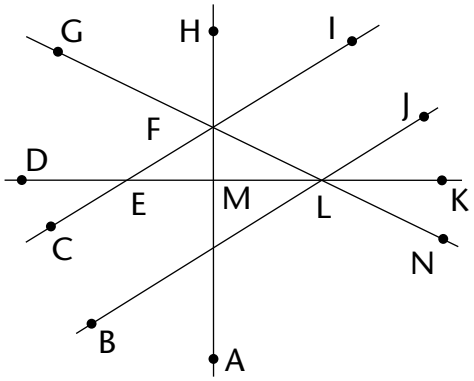
Identifying Angles

EXAMPLE Classify $\angle EIA$.

$\angle EIA$ is more than 90°.

$\angle EIA$ is an obtuse angle.





Directions Use the diagram above to answer these questions.

1. Write two lines that seem parallel. _____

2. What kind of angle is $\angle CFG$? _____

3. What kind of angle is $\angle NLB$? _____

4. What two lines appear perpendicular? _____

5. Classify angle $\angle AMD$. _____

6. Classify angle $\angle GFA$. _____

7. List all the vertices. _____

8. List two intersecting lines. _____

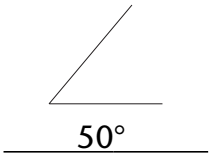
Name Date Period

Measuring Angles

EXAMPLE

Place protractor on angle so that center is on the vertex. The baseline should be on one of the rays.

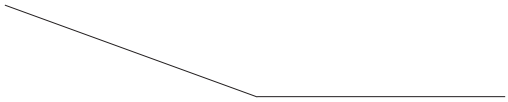
Make sure the second ray crosses the scale. Read the scale.



50°

Directions Use a straightedge (ruler). Extend the sides of these angles. Measure with a protractor. Each angle will be less than 180°.

1.



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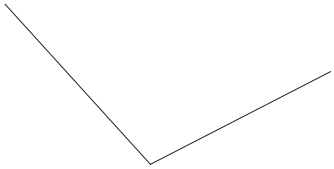
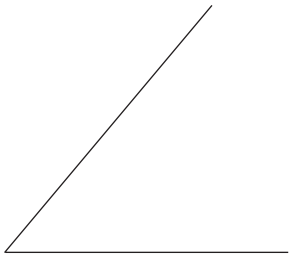


2.



4.

Patterns Using Squares

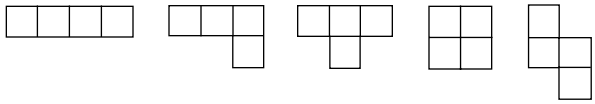
EXAMPLE

Dominoes is a game played with tiles.
Each tile is two squares placed side by side.
This is the only way the squares can be arranged: 

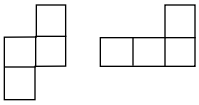
Triminoes are arrangements of three squares. There are two trimino shapes. They are  and  .

Notice that the squares must touch on their edges.
They do not touch on their corners.

Quadriminoes are arrangements of four squares. There are five basic quadriminoes. Some have mirror images, or the same shape but backward. The five basic shapes and two mirror images are shown.



Basic Shapes



Mirror Images

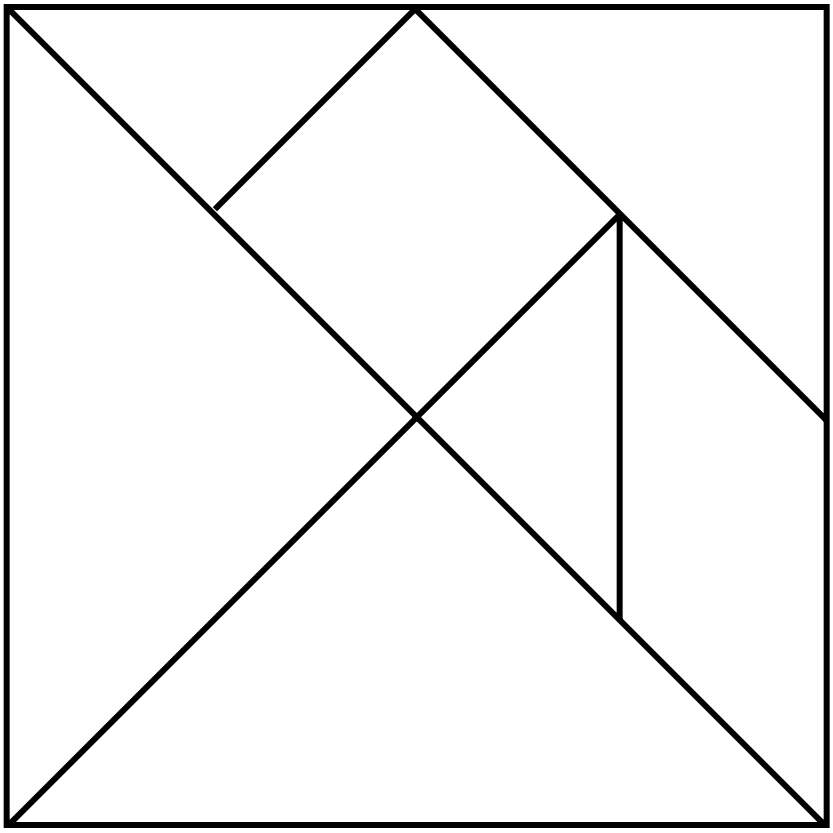
Directions Solve the problems below.

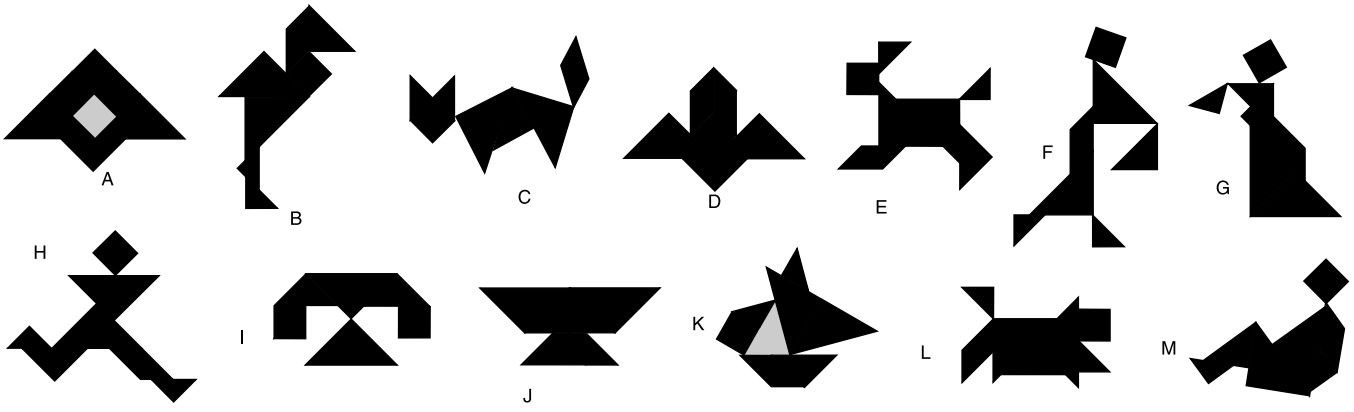
1. **Pentominoes** are arrangements of five squares. Use the graph paper. Draw the twelve pentominoes.
2. Cut out the pentominoes. Arrange the twelve shapes into a rectangle that is six squares wide by ten squares long. Try to do this. Trace your solution on paper.
3. Pentominoes can form other rectangles. One measures five squares wide by twelve squares long. One is four squares by fifteen squares. Another is three squares by twenty squares. Try to make these rectangles. Trace your solutions. (The three-by-twenty rectangle is difficult to do.)
4. **Hexominoes** are arrangements of six squares. See how many you can draw on your graph paper.

Tangrams

Directions A tangram is an old Chinese puzzle. It is a square made from seven pieces, or tans. Cut the tangram into pieces along the lines. Arrange the pieces to make different shapes. Each shape uses all seven tans. Do not put one piece over the other.

1. Put the shapes back together as a square.
2. Make a parallelogram.
3. Make a triangle.
4. Make some of the shapes shown below.

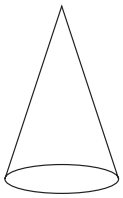




Name Date Period

Solid Figures

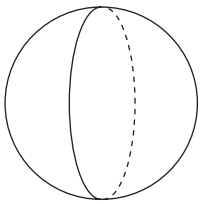
EXAMPLE Look at the solid figure. Name it.



cone

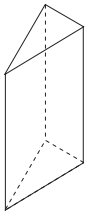
Directions Name these solid figures.

1.



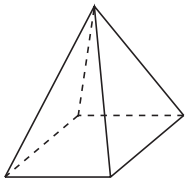
_____

2.



_____

3.



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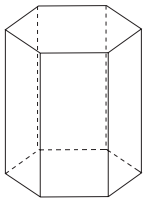

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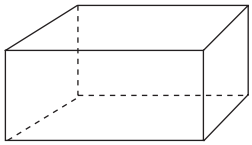

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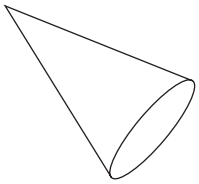
6.



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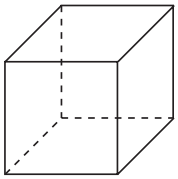
7.



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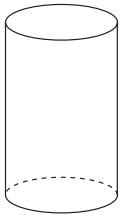


_____

Units of Measurement

EXAMPLE

Circle the letter of the best answer.

Think about what the prefix means.
Think about how one unit of measure connects to the other.

Centimeter means one-hundredth meter.
3 centimeters is 3 one-hundredths or 0.03 meters.

3 centimeters
- **A** 300 meters
- **B** 30 meters
- **C** 0.3 meters
- **D** 0.03 meters

Prefix	Value	Symbol	Example
kilo	one thousand	k	kilometer
hecto	one hundred	h	hectometer
deka	ten	da	dekagram
deci	one-tenth	d	decimeter
centi	one-hundredth	c	centigram
milli	one-thousandth	m	millimeter

Sometimes **deka** is spelled **deca.**

Directions Circle the letter of the best answer.

1. 4 kilometers
- **A** 4 meters
- **B** 0.004 meters
- **C** 4,000 meters
- **D** 400,000 meters

2. 6 dekameters
- **A** 60 meters
- **B** 600 meters
- **C** 0.60 meters
- **D** 600 meters

3. 2 hectometers
- **A** 2 meters
- **B** 20 meters
- **C** 0.02 meters
- **D** 200 meters

4. 6 hectometers
- **A** 6 meters
- **B** 0.06 meters
- **C** 0.006 meters
- **D** 600 meters

5. 17 kilometers
- **A** 1,700 meters
- **B** 17,000 meters
- **C** 17 meters
- **D** 1.7 meters

6. 45 centimeters
- **A** 45 meters
- **B** 4.5 meters
- **C** 0.45 meters
- **D** 0.045 meters

7. 9 decimeters
- **A** 90 meters
- **B** 9 meters
- **C** 0.9 meters
- **D** 0.09 meters

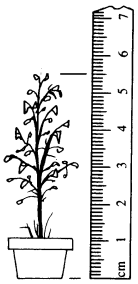
8. 5 millimeters
- **A** 5 meters
- **B** 0.5 meters
- **C** 0.05 meters
- **D** 0.005 meters

Measuring Lengths

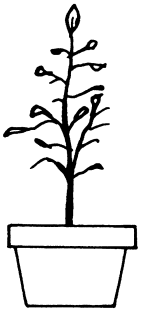
EXAMPLE

Each numbered space on a metric ruler is one centimeter (cm). Each smaller space is one millimeter (mm). A millimeter is one-tenth of a centimeter.There are ten millimeters in one centimeter.

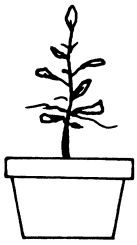
The distance is 55 millimeters or 5.5 centimeters.



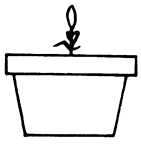
Directions Use a metric ruler to measure the distance from the bottom of each pot to the top of the plant. Give the measurement in both millimeters and centimeters.



1. _____



2. _____

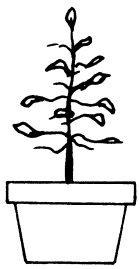


3. _____

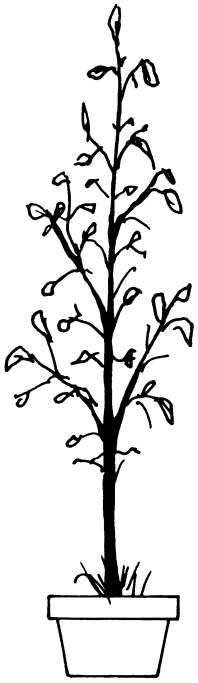
4. _____

5. _____

6. _____



7. _____



8. _____

Appropriate Units

EXAMPLE

Circle the most reasonable measurement.

Length of your math book. 24 mm (24 cm) 24 m 24 km

Think of the length of the object and the size of the unit.
Choose the unit that is most reasonable.

Directions Circle the most reasonable measurement.

1. Length of a pen
15 mm 15 cm 15 m 15 km

2. The length of a sheet of paper
28 mm 28 cm 28 m 28 km

3. The height of a house
15 mm 15 cm 15 m 15 km

4. The width of a kitchen
3 mm 3 cm 3 m 3 km

5. The length of your arm
620 mm 620 cm 620 m 620 km

6. The distance between two cities
84 mm 84 cm 84 m 84 km

7. The length of a finger
53 mm 53 cm 53 m 53 km

8. Your height
1.6 mm 1.6 cm 1.6 m 1.6 km

Directions Use the diagram and conversion chart. Fill in the missing numbers.

1 kilometer = 1,000 meters
1 meter = 100 centimeters
1 centimeter = 10 millimeters
1 meter = 1,000 millimeters

km __3__ m __2__ cm __1__ mm

9. 426 cm = _____ m

10. 385 m = _____ km

11. 48 cm = _____ mm

12. 78 m = _____ cm

13. 96 cm = _____ m

14. 86 mm = _____ cm

15. 8 m = _____ mm

16. 52.8 cm = _____ m

17. 4.16 km = _____ m

18. 18.2 m = _____ km

19. 7.2 cm = _____ mm

20. 3,860 mm = _____ m

21. 4,360 cm = _____ m

22. 0.0024 km = _____ cm

Name Date Period

Working with Measurements of Length

EXAMPLES

2.6 m = 260 cm
2 places →

km 3 m 2 cm 1 mm
→

5.2 cm = 0.000052 km
← 5 places

km 3 m 2 cm 1 mm
←

The decimal has moved 5 places to the left. The arrow has moved under the 2 and the 3. 2 + 3 = 5. Move the decimal 5 places in the direction of the arrow.

Directions Use the charts. Make these conversions.

1. 7 m = _____ cm

2. 61 cm = _____ mm

3. 18 mm = _____ cm

4. 0.003 km = _____ m

5. 1.9 cm = _____ mm

6. 1 mm = _____ cm

7. 0.025 cm = _____ mm

8. 20 m = _____ km

9. 1.7 km = _____ m

10. 2 mm = _____ km

11. 5.6 km = _____ cm

12. 1 mm = _____ m

13. 0.1 km = _____ m

14. 9,300 m = _____ km

Directions Add to find the answers.

15. 2 m + 0.01 km = _____ m

16. 0.01 cm + 5 mm = _____ mm

17. 1,000 m + 2 km = _____ m

18. 28 km + 200 m = _____ km

19. 34 cm + 100 mm = _____ cm

20. 1 m + 1 cm = _____ cm

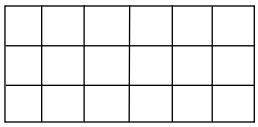
21. 4.5 cm + 90 mm = _____ cm

22. 120 mm + 10 cm = _____ mm

Name Date Period

Area

EXAMPLE



Area = length × width
Area = 6 units × 3 units
Area = 18 square units

All area measurements are written as square units.

Directions Find the area of these rectangles.

1. length = 14 m
width = 6 m

_____

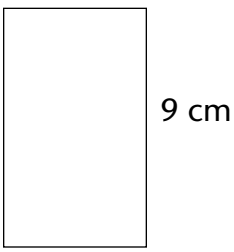
2. length = 7 meters
width = 13 meters

_____

3. length = 100 cm
width = 1 cm

_____

4.



_____

5. length = 25 mm
width = 10 mm

_____

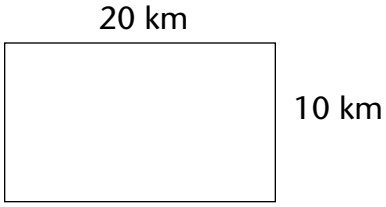
6. length = 5 cm
width = 5 cm

_____

7. length = 22 cm
width = 19 cm

_____

8.



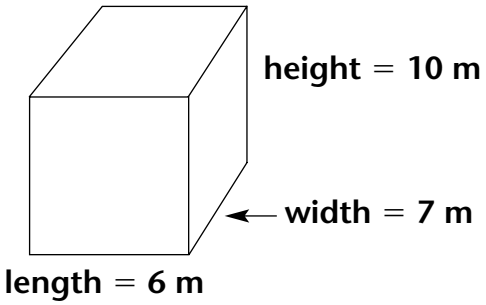
_____

Name Date Period

Volume

EXAMPLE Find the volume of this figure.

Volume = length × width × height
= 6 m × 7 m × 10 m
= 420 cubic meters or 420 m^3



Directions Find the volume for these figures.

1. length = 19 m
width = 8 m
height = 8 m
_____

2. length = 4 cm
width = 4 cm
height = 4 cm
_____

3. length = 4 km
width = 5 km
height = 10 km
_____

4. length = 9 km
width = 20 km
height = 25 km
_____

5. length = 2 km
width = 1 km
height = 1.5 km
_____

6. length = 20 km
width = 15 km
height = 20 km
_____

7. length = 20 mm
width = 55 mm
height = 230 mm
_____

8. length = 4 m
width = 12 m
height = 2 m
_____

9. length = 5 mm
width = 5 mm
height = 10 mm
_____

10. length =17 m
width = 2 m
height = 14 m
_____

11. length = 11 cm
width = 20 cm
height = 12 cm
_____

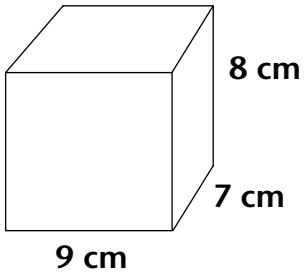
12. length = 100 m
width = 70 m
height = 50 m
_____

Name Date Period

Capacity

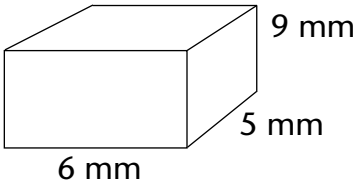
EXAMPLE

Volume = length × width × height
= 9 cm × 7 cm × 8 cm
= 504 cubic cm

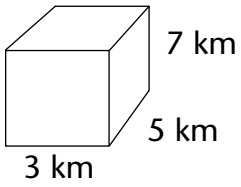


Directions Find the capacity.

1.



2.



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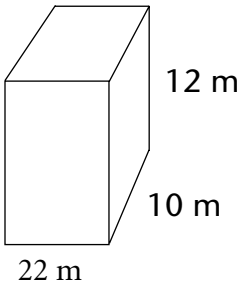

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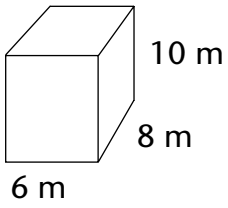
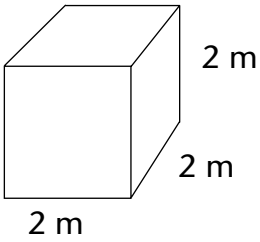


5.



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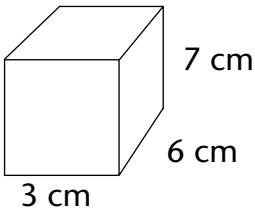

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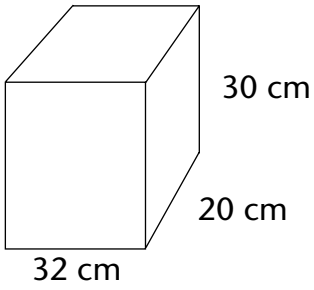

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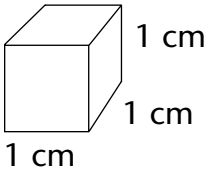
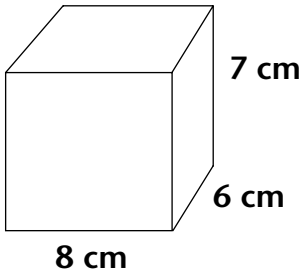


Name Date Period

Units of Capacity

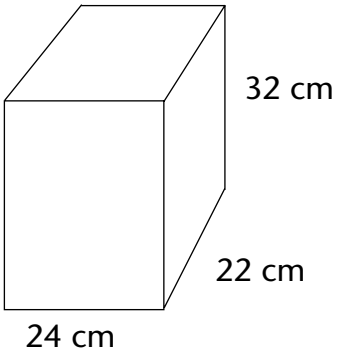
EXAMPLE Find the volume. Divide the volume by 1,000 to change to liters.

Volume = length × width × height
= 8 cm × 6 cm × 7 cm
= 336 cubic cm
336 ÷ 1,000 = 0.336 liters



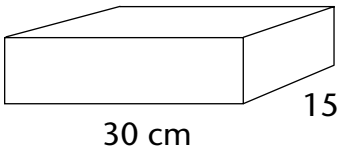
Directions Find the volume for these figures.
Divide volume by 1,000 to change to liters.

1.



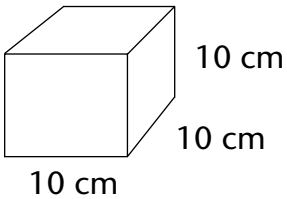
_____

2.



_____

3.



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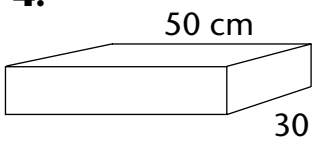
4.



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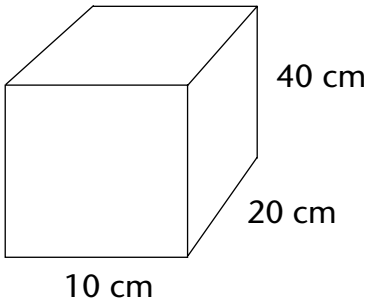
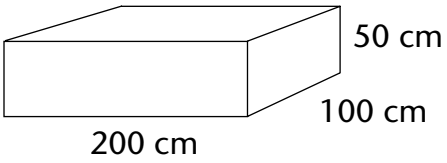
5.



_____

6.



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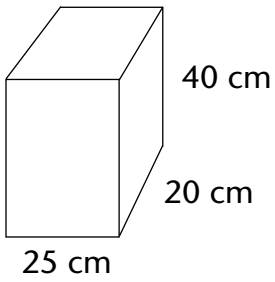
7.



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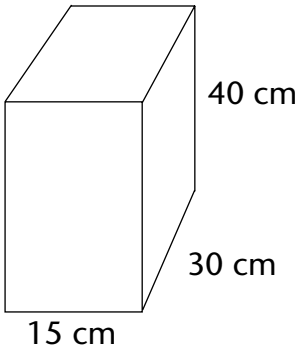
8.



_____

Name Date Period

Mass

EXAMPLE Circle the most reasonable unit of measurement.

a jet plane
mg g (kg)

A jet plane has a large mass. Use kilograms to measure its mass.

Directions Choose the best measurement for each of these items. Circle your answer.

1. a cup
mg g kg

2. a paper clip
mg g kg

3. a table lamp
mg g kg

4. a car engine
mg g kg

5. an alligator
mg g kg

6. a bowling ball
mg g kg

7. an olive
mg g kg

8. a small bug
mg g kg

9. a football team
mg g kg

10. a cracker
mg g kg

11. a duck
mg g kg

12. a bar of soap
mg g kg

13. a head of lettuce
mg g kg

14. a slice of bread
mg g kg

15. a roll of quarters
mg g kg

16. a telephone book
mg g kg

17. a kitchen stove
mg g kg

18. a kitchen blender
mg g kg

19. a bucket of sand
mg g kg

20. a ladder
mg g kg

21. a tugboat
mg g kg

22. a VCR
mg g kg

23. a couch
mg g kg

24. a house cat
mg g kg

Name Date Period

Working with Units of Mass

EXAMPLE 3,300 grams = _____ kilograms

Step 1 Draw a line from g to kg.
Step 2 The line moves to the left. It passes the 3.

The 3 means move the decimal 3 places to the left.

kg 3 g 2 cg 1 mg

3,300 grams = 3.3 kilograms

Directions Use the chart to help make these conversions.

1 kilogram = 1,000 grams
1 gram = 100 centigrams
1 centigram = 10 milligrams
1 gram = 1,000 milligrams

1. 50 mg = _____ g

2. 6 cg = _____ g

3. 2 cg = _____ mg

4. 300 mg = _____ kg

5. 0.03 cg = _____ mg

6. 22 cg = _____ g

7. 350 mg = _____ kg

8. 120 mg = _____ cg

9. 2,000 mg = _____ kg

10. 0.78 kg = _____ g

11. 4 kg = _____ g

12. 12.3 g = _____ cg

Name Date Period

Capacity

EXAMPLES

6 pints = 96 fluid ounces
Multiply. $6 \times 16 = 96$

6 quarts = 192 fluid ounces
Write this: 6 quarts = 12 pints = 192 fluid ounces

Commonly Used Measurements
1 pint = 16 fluid ounces
1 quart = 2 pints
1 quart = 32 fluid ounces
1 gallon = 4 quarts

Directions Make these conversions. Multiply to convert from large to smaller units.

1. 7 pints = _____ fluid ounces
2. 5 gallons = _____ quarts
3. 23 pints = _____ fluid ounces
4. 6 gallons = _____ quarts
5. 3 gallons = _____ quarts
6. 9 quarts = _____ pints
7. 17 gallons = _____ quarts
8. 12 quarts = _____ pints

Directions Change the units to intermediate units first.

9. 23 gallons = _____ pints
10. 15 quarts _____ fluid ounces

Directions Make these conversions. Divide to convert from small to larger units. If necessary, write answers as mixed numbers.

11. 24 fluid ounces = _____ pints
12. 20 pints = _____ quarts
13. 30 pints = _____ quarts
14. 28 pints = _____ quarts
15. 14 quarts = _____ gallons
16. 9 pints = _____ quarts
17. 24 pints = _____ quarts
18. 40 quarts = _____ gallons
19. 23 quarts = _____ gallons
20. 36 fluid ounces = _____ pints

Name Date Period

Converting Units of Weight

EXAMPLES Multiply or divide to convert units.

2 tons = _____ pounds
2 × 2,000 = 4,000 pounds

7,000 pounds = _____ tons
7,000 ÷ 2,000 = $3\frac{1}{2}$ tons

Commonly Used Measurements
1 pound = 16 ounces
1 ton = 2,000 pounds

Directions Multiply to convert large units to small units.

1. 3 tons = _____ pounds

2. 15 tons = _____ pounds

3. 13 pounds = _____ ounces

4. 4.5 tons = _____ pounds

5. 10.5 pounds = _____ ounces

6. 0.5 tons = _____ pounds

7. 1.5 tons = _____ pounds

8. 6.2 tons = _____ pounds

9. 3.5 pounds = _____ ounces

10. 2.5 tons = _____ pounds

11. 9.5 tons= _____ pounds

12. 7 pounds = _____ ounces

13. 10.5 tons = _____ pounds

14. 1.5 pounds = _____ ounces

Directions Divide to convert small units to large units.
Write remainders as fractions.

15. 20,000 pounds = _____ tons

16. 320 ounces = _____ pounds

17. 480 ounces = _____ pounds

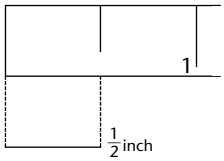
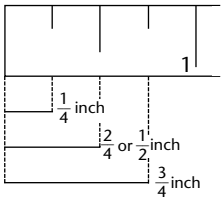
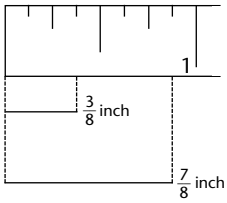
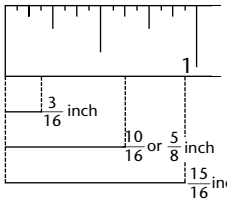
18. 40,000 pounds = _____ tons

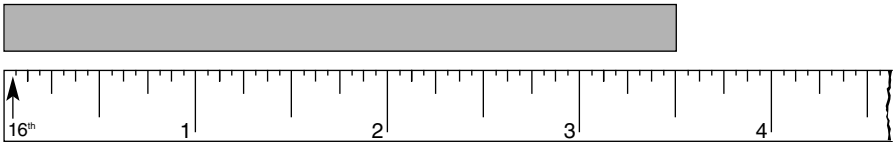
19. 30,000 pounds = _____ tons

20. 200 ounces = _____ pounds

Measuring with Inches

EXAMPLE Before you can measure distances in the customary system, you will need to know about the marks on a ruler. Look at the first inch on your ruler.

One Inch	Divided into Two Parts	Divided into Four Parts	Divided into Eight Parts	Divided into Sixteen Parts
				
	Each part is $\frac{1}{2}$ inch.	Each part is $\frac{1}{4}$ inch.	Each part is $\frac{1}{8}$ inch.	Each part is $\frac{1}{16}$ inch.



The length of this bar is $3\frac{1}{2}$ inches.

Directions Measure the length of each bar to the nearest sixteenth inch. Simplify answers.

1. 

2. 

3. 

4. 

5. 

6. 

7. 

Name Date Period

Lengths and Distances

EXAMPLES

6 feet = _____ inches

$6 \times 12 = 72$

because 12 inches = 1 foot

6 feet = 72 inches

40 inches = _____ feet

$40 \div 12 = 3\frac{4}{12}$ or $3\frac{1}{3}$

because 12 inches = 1 foot

40 inches = $3\frac{1}{3}$ feet

Use the chart to make these conversions.

1 foot = 12 inches
1 yard = 36 inches
1 yard = 3 feet
1 mile = 5,280 feet

Directions Multiply to make these conversions.

1. 4 miles = _____ feet

2. 12 feet = _____ inches

3. 3 miles = _____ feet

4. 52 feet = _____ inches

5. 11 miles = _____ feet

6. 8 yards = _____ feet

7. 11 feet = _____ inches

8. 13 yards = _____ feet

Directions Divide to make these conversions. Write remainders as fractions.

9. 50 inches = _____ feet

10. 10 inches = _____ feet

11. 21 feet = _____ yards

12. 31,680 feet = _____ miles

13. 7,040 feet = _____ miles

14. 9,240 feet = _____ miles

15. 66 inches = _____ feet

16. 72 inches = _____ yards

Name Date Period

Operations with Linear Measurements

EXAMPLES

Add.

3 feet 5 inches
+ 7 feet 9 inches
10 feet 14 inches or
11 feet 2 inches

Subtract.

5 feet 6 inches
− 2 feet 8 inches
2 feet 10 inches

Multiply.

2 feet 7 inches
× 5
10 feet 35 inches or
12 feet 11 inches

Divide.

14 yards 6 feet 10 inches ÷ 2 =

$\frac{14 \text{ yards}}{2}$ $\frac{6 \text{ feet}}{2}$ $\frac{10 \text{ inches}}{2}$ =

7 yards 3 feet 5 inches or
8 yards 0 foot 5 inches

Directions Add. Simplify answers.

1. 6 yards 1 foot
+ 4 yards 1 foot

2. 7 yards 2 feet
+ 5 yards 1 foot

3. 5 feet 6 inches + 6 feet 10 inches = _____

Directions Subtract. Simplify answers.

4. 11 yards 1 foot
− 4 yards 2 feet

5. 11 yards 4 feet
− 3 yards 7 feet

6. 4 yards 3 feet − 4 feet = _____

Directions Multiply. Simplify answers.

7. 8 feet 3 inches
× 4

8. 4 yards 5 feet 6 inches
× 3

9. 2 × (4 yards 3 feet 5 inches) = _____

Directions Divide. Simplify answers.

10. (15 yards 21 feet 9 inches) ÷ 3 = _____

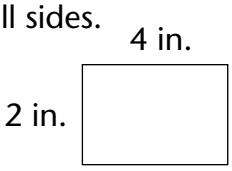
11. (8 yards 2 feet 10 inches) ÷ 2 = _____

12. (21 yards 28 feet 21 inches) ÷ 7 = _____

Name Date Period

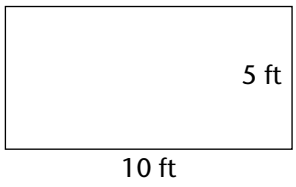
Perimeter

EXAMPLE To find perimeter, add the lengths of all sides.
$4 + 4 + 2 + 2 = 12$ in.



Directions Find the perimeter.

1.



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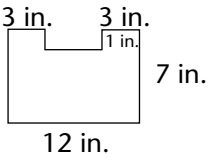

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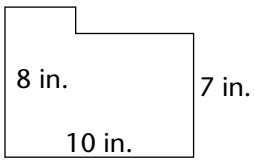

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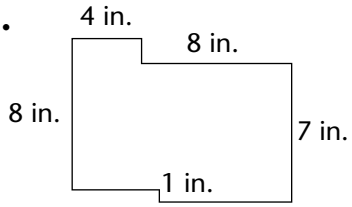
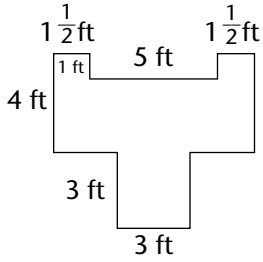


5.



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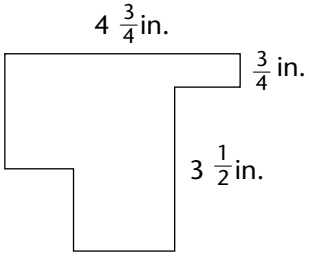

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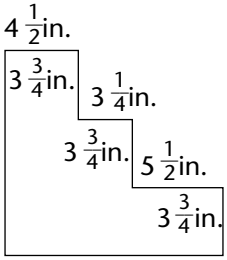
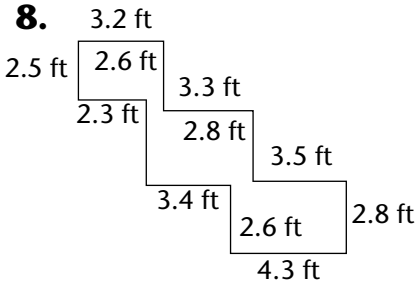


8.



Name Date Period

Area

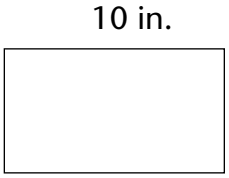
EXAMPLE

Multiply length by width to find area.

$A = l \times w$

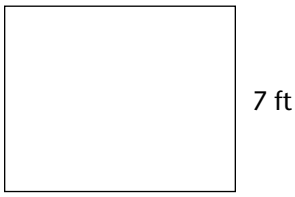
$A = 10 \times 5$

$A = 50$ square inches



Directions Find the area of each rectangle.

1.



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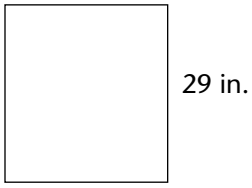
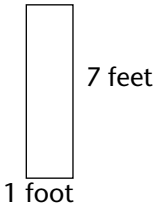


3.

4.



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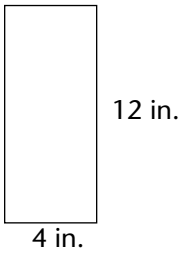

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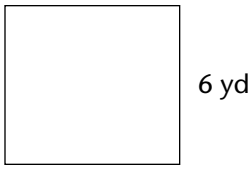

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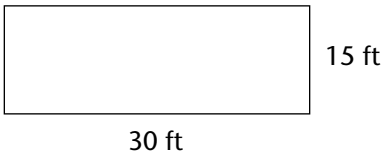

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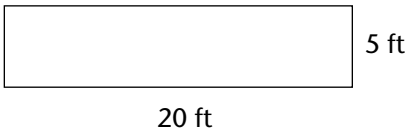


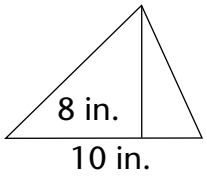
Area of a Triangle

EXAMPLE Find the area of a triangle by multiplying $\frac{1}{2}$ base by height.

$A = \frac{1}{2}$ base $\times$ height

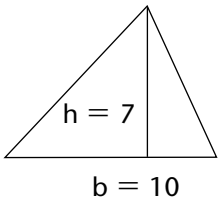
$A = \frac{1}{2} 8 \times 10$

$A = 40$ square inches



Directions Find the area of each triangle. The measurements are given in inches.

1.



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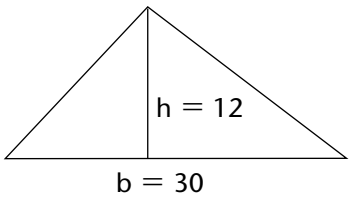

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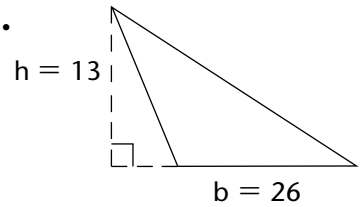

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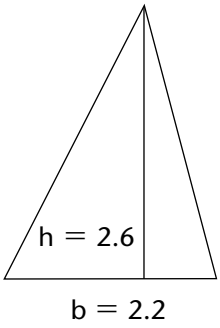

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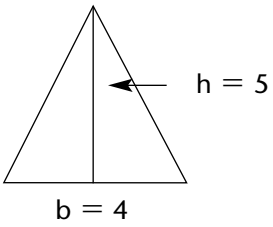

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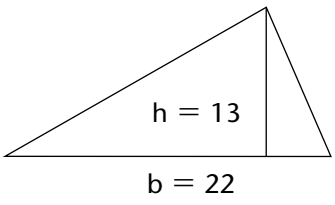

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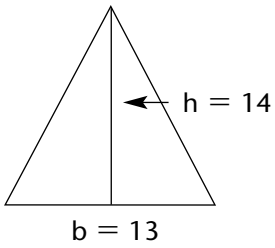

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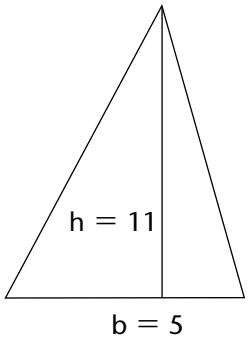


Name Date Period

Area

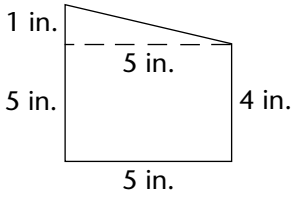
EXAMPLE

To find area of odd shapes, find the area of parts and multiply.

$A = l \times w$ $A = \frac{1}{2}bh$

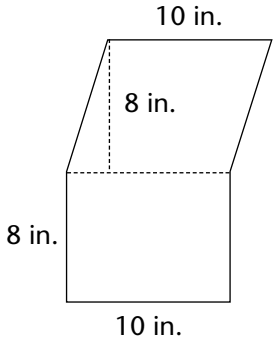
$A = 4 \times 5$ $A = \frac{1}{2}5 \times 1$

$A = 20$ $A = 2.5$ $20 + 2.5 = 22.5$ square inches

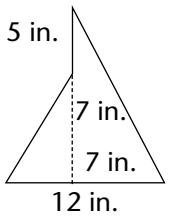


Directions Find the area of each shape.

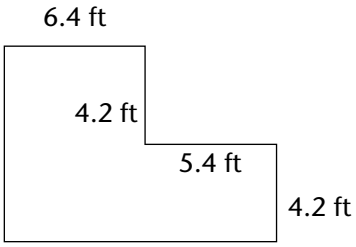
1.



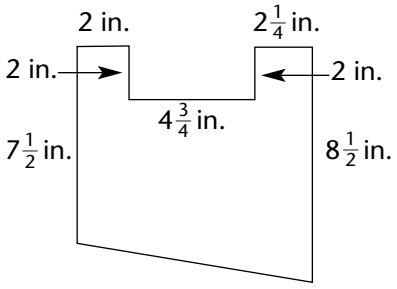
3.



2.



4.

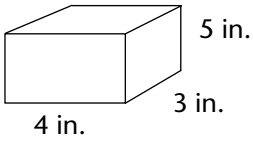


Name Date Period

Volume of a Rectangular Prism

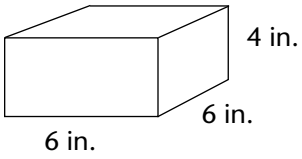
EXAMPLE The volume of a rectangular prism = length × width × height.

$V = l \times w \times h$
$V = 4 \times 3 \times 5$
$V = 60$ cubic inches



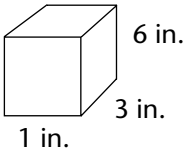
Directions Find the volume.

1.



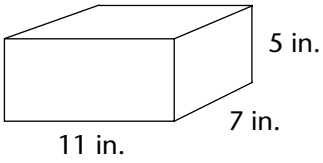
_____

2.



_____

3.



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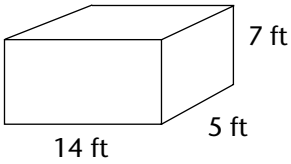

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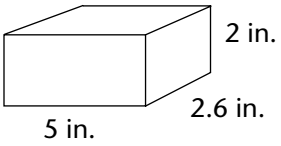

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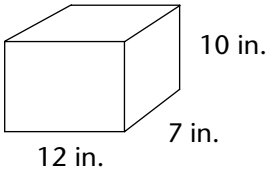

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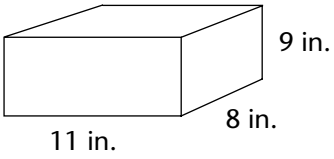

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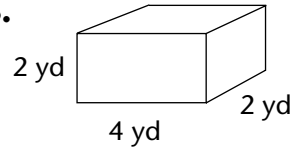


_____

9. length = 4 yards
width = 4 yards
height = 9 feet
Volume = _____

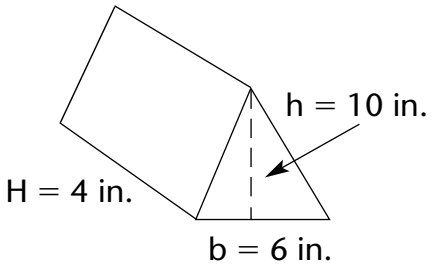
10. length = 6 feet
width = 6 feet
height = 1 yard
Volume = _____

11. length = 1 yard
width = 7 feet
height = 2 feet
Volume = _____

12. length = 5 yards
width = 7 yards
height = 6 yards
Volume = _____

Volume of a Triangular Prism

Volume $= \frac{1}{2}$ (base $\times$ height) Height



Volume $= \frac{1}{2}$ (base $\times$ height) Height
$= \frac{1}{2}$ (6 $\times$ 10) $\times$ 4
$= \frac{1}{2}$ (60) $\times$ 4
$= 30 \times 4$
$= 120$ cubic inches

Directions Solve for the volume.

1. base = 10 inches
height = 7 inches
Height = 5 inches
Volume = _____

2. base = 7 inches
height = 3 inches
Height = 18 inches
Volume = _____

3. base = 3 inches
height = 5 inches
Height = 11 inches
Volume = _____

4. base = 5 inches
height = 3 inches
Height = 20 inches
Volume = _____

5. base = 6 inches
height = 6 inches
Height = 15 inches
Volume = _____

6. base = 16 inches
height = 10 inches
Height = 3 inches
Volume = _____

7. base = 6 inches
height = 4 inches
Height = 7 inches
Volume = _____

8. base = 11 inches
height = 10 inches
Height = 20 inches
Volume = _____

9. base = 10 inches
height = 11 inches
Height = 21 inches
Volume = _____

10. base = 7 inches
height = 10 inches
Height = 12 inches
Volume = _____

11. base = 22 inches
height = 11 inches
Height = 7 inches
Volume = _____

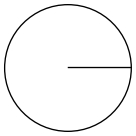
12. base = 3 inches
height = 21 inches
Height = 8 inches
Volume = _____

Circumference

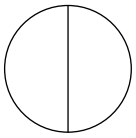
EXAMPLE A circle has a radius of 4. Find its circumference.

Circumference $= \pi \times d$
diameter (d) $= 2\ r$
$\pi = 3.14$
$d = 2\ (4)$
$d = 8$
Circumference $= \pi \times d$
$C = 3.14 \times 8$
$C = 25.12$

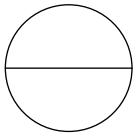
Directions Find the circumferences of these circles.

1. 

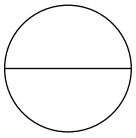
r = 12

2. 

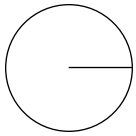
d = 4

3. 

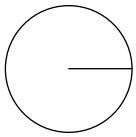
d = 20

4. 

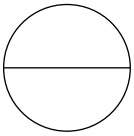
d = 33

5. 

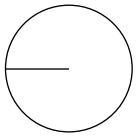
r = 5.5

6. 

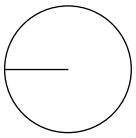
r = 8

7. 

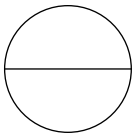
d = 11

8. 

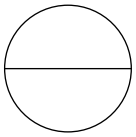
r = 30

9. 

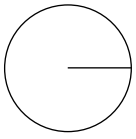
r = 2.5

10. 

d = 22

11. 

d = 2

12. 

r = 5

Name Date Period

Working with Circles

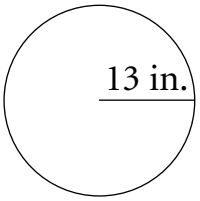
EXAMPLE

$C = 2 \times \pi \times \text{radius}$ $\qquad r = 4$

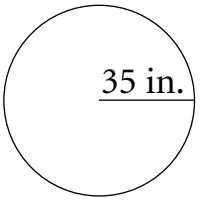
$C = 2 \times \frac{22}{7} \times 4 = \frac{176}{7} = 25\frac{1}{7}$ $\qquad C = 2 \times 3.14 \times 4 = 25.12$

Directions Find circumference.
Use $\frac{22}{7}$ for π.

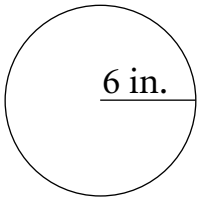
1.



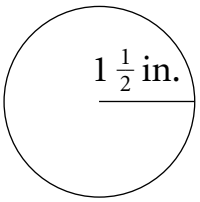
3.



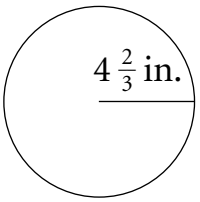
5.



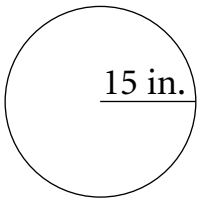
2.



4.

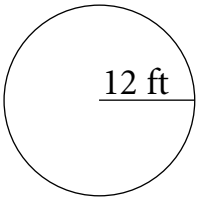


6.

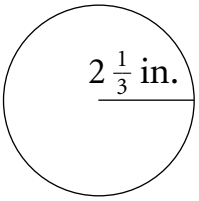


Directions Find area. For 7–9, use $\frac{22}{7}$ for π.
For 10–12, use 3.14 for π.

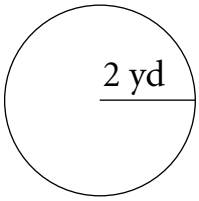
7.



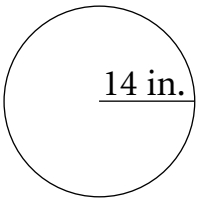
9.



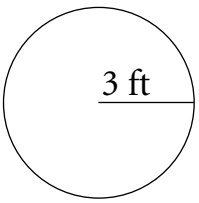
11.



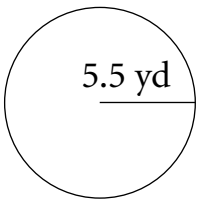
8.



10.



12.



Volume of a Cylinder

EXAMPLE

Volume $= \pi r^2 H$

$r = 4$

$H = 10$

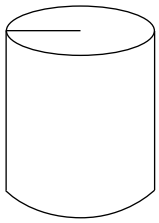
$= 3.14 \times 4^2 \times 10$

$= 3.14 \times 16 \times 10$

$= 502.4$ cubic units

Directions Find volume. Remember to write answers in cubic units.

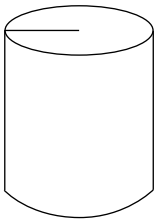
1.



$r = 5$

$H = 9$

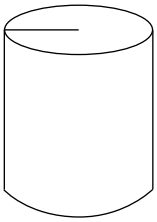
2.



$r = 2.6$

$H = 8$

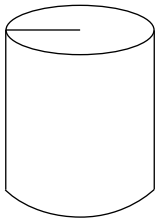
3.



$r = 3$

$H = 11$

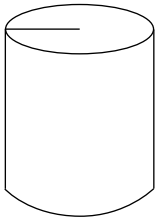
4.



$r = 1$

$H = 17$

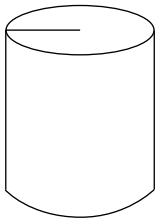
5.



$r = 14$

$H = 10$

6.



$r = 20$

$H = 10$

7. radius $= 20$

height $= 2$

Volume $=$ _____

8. radius $= 10$

height $= 15$

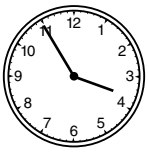
Volume $=$ _____

Name Date Period

Working with Time

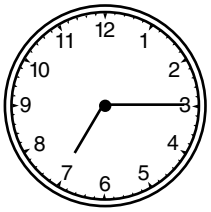
EXAMPLE

The short hand tells the hour.
The long hand tells the minutes.



3:55 or 5 to 4

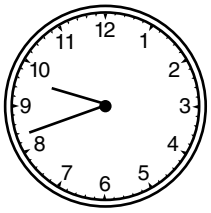
Directions Write the time shown on each clock.

1. 

_____

2. 3:19

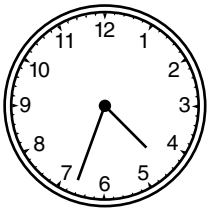
_____

3. 

_____

4. 8:12

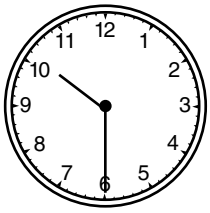
_____

5. 

_____

6. 12:48

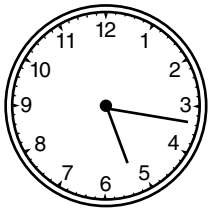
_____

7. 

_____

8. 6:35

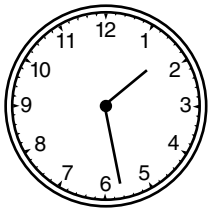
_____

9. 

_____

10. 2:28

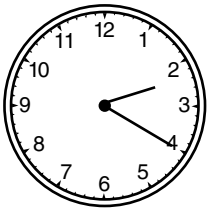
_____

11. 

_____

12. 5:53

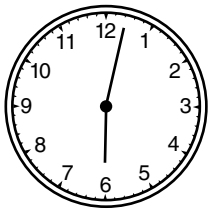
_____

13. 

_____

14. 1:27

_____

15. 

_____

Elapsed Time

EXAMPLES

Look at the number that the little hand points to or has just passed. That is the hour.

Count the spaces from the 12 to the big hand. They are the minutes. Each number counts as 5 minutes. Each space counts as 1 minute.

Clock A

Clock B 8:30
Clock A 3:20
5:10

Clock B

Clock A

2:30

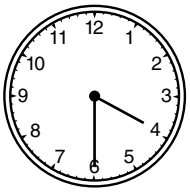
Clock B 10:05 = 9:65
Clock A 2:30 = 2:30
7:35

Clock B

10:05

Directions Write the time on each clock. First write the hour, then a colon, and then the minutes.

1.



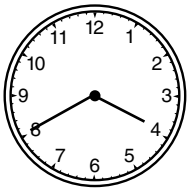
_____

2.

7:27

_____

3.



_____

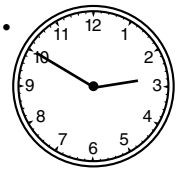
4.

2:57

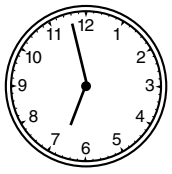
_____

Directions Subtract. Find the amount of time that has elapsed from the time shown on Clock A to the time shown on Clock B. You may need to rename 1 hour as 60 minutes.

5. Clock A



Clock B



_____

6. Clock A

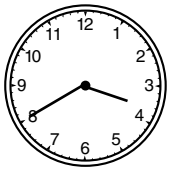
4:32

Clock B

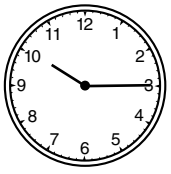
11:52

_____

7. Clock A



Clock B



_____

8. Clock A

6:07

Clock B

10:28

_____

Using Pictographs

EXAMPLE

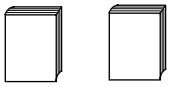
Look at the pictograph below.

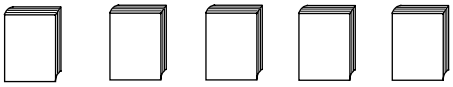
One book is equal to 5 books read.
Did Rinker or Marvin read more books?
Rinker read 25 books.
Marvin read 35 books.

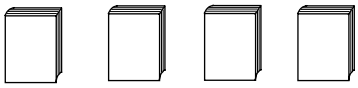
Marvin read more books.

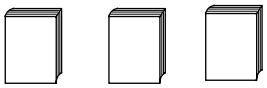
Directions Write the number of books read.

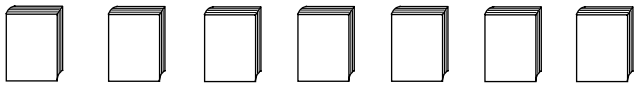
 = 5 books read

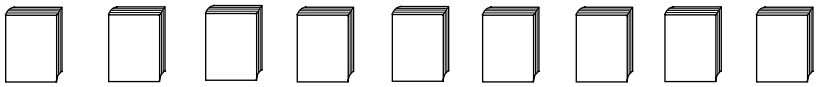
A. _____ 

B. _____ 

C. _____ 

D. _____ 

E. _____ 

F. _____ 

Directions Write the letter for each club student.

1. Juan read 45 books for the club. _____

2. Renee read 10 books. _____

3. Marlene read twice as many books as Renee. _____

4. Marvin read 10 fewer books than Juan. _____

5. Will read 5 more books than Renee. _____

6. Rinker read 25 books. _____

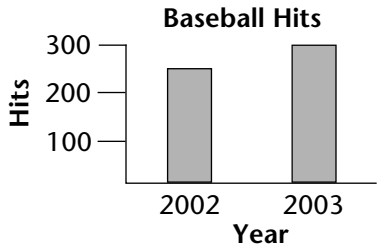
Directions Use the pictograph to answer the questions.

7. How many books did Rinker and Marlene read together? _____

8. How many books did everyone read? _____

Bar Graphs

EXAMPLE Make a graph to show 250 baseball hits in 2002 and 300 baseball hits in 2003. Follow the directions given.



To make a bar graph, follow these five steps:

Step 1 Will you make vertical bars?
Will you make horizontal bars?

Step 2 Choose a scale.

Step 3 Label the axes.

Step 4 Draw the bars.

Step 5 Give the graph a title.

Directions Make a horizontal bar graph.

SOFTBALL DISTANCE THROW	
Contestant	**Distance**
Lucia	140 feet
Kevin	120 feet
Sandy	170 feet
Carmine	150 feet

Directions Make a vertical bar graph.

HIGH JUMP	
Contestant	**Height Jumped**
Anita	53 inches
Jim	50 inches
Vickie	62 inches
Robert	57 inches
Flo	55 inches

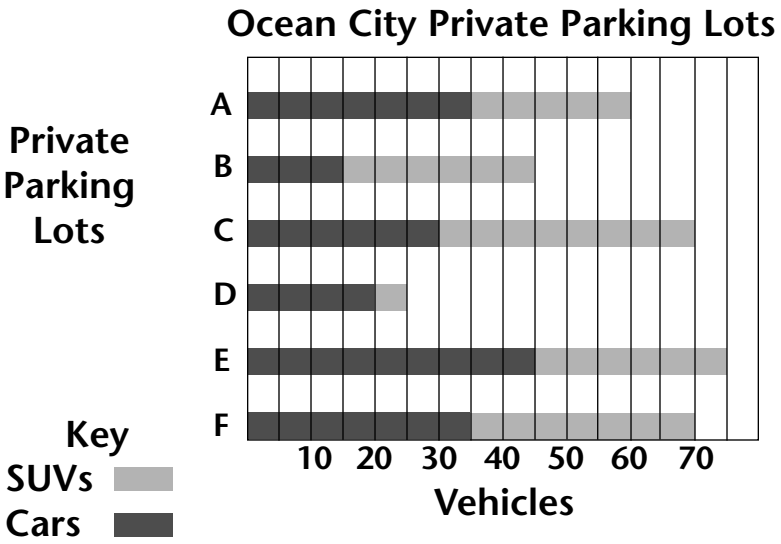
Divided Bar Graphs

EXAMPLE How many cars are in Lot E?

Find E on the graph.
Read the key.
The scale is 5 vehicles per section.
Cars make up 9 sections.

$9 \times 5 = 45$ 45 cars are parked in Lot E.

Directions Use the divided bar graph to answer the questions.



1. How many SUVs are parked on Lot B? _____

2. How many cars are parked on Lot C? _____

3. How many vehicles are parked on Lot F? _____

4. How many SUVs are parked on Lot D? _____

5. How many cars are parked on Lot B? _____

6. How many vehicles are parked on Lots A and B combined? _____

7. How many SUVs are there in all the lots? _____

8. How many vehicles are there in all the lots? _____

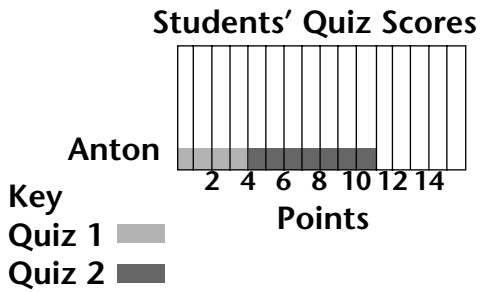
Making Divided Bar Graphs

EXAMPLE

Anton scored 4 extra points in the first quiz. He made 7 extra points in the second quiz.

Write his name on the vertical axis. Decide on the scale. Shade to show 4 points on the first quiz and add 7 points for the second quiz.

Make a key. Write a title.

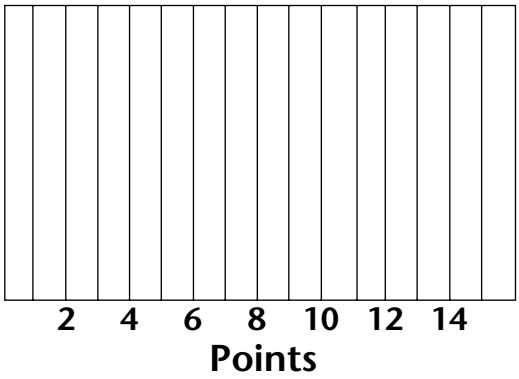


Directions Draw and shade the graphs.

1.

First quarter extra credit from quizzes

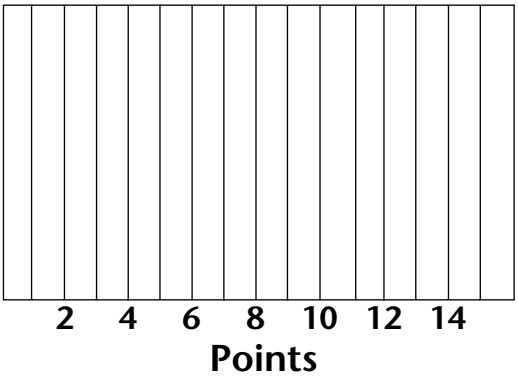
Names	First Quiz	Second Quiz
Linda	7	7
Bertha	5	7
Larry	7	5



2.

First quarter extra credit from quizzes

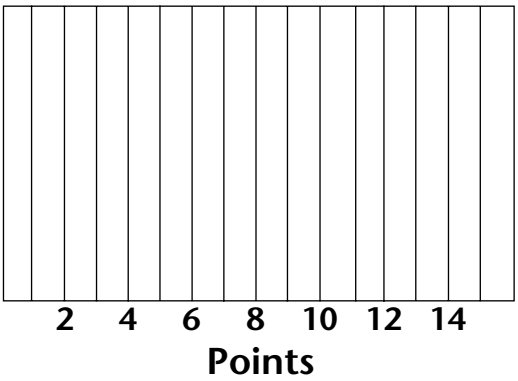
Names	First Quiz	Second Quiz
Martha	4	2
Kathy	4	3
Henry	2	4



3.

First quarter extra credit from quizzes

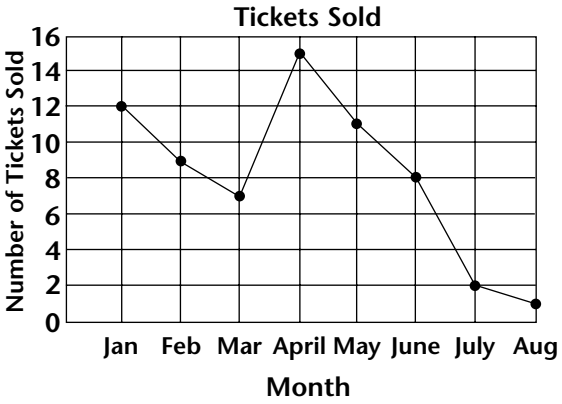
Names	First Quiz	Second Quiz
Carl	6	5
Jeanne	4	2
Luke	8	4



Constructing Line Graphs

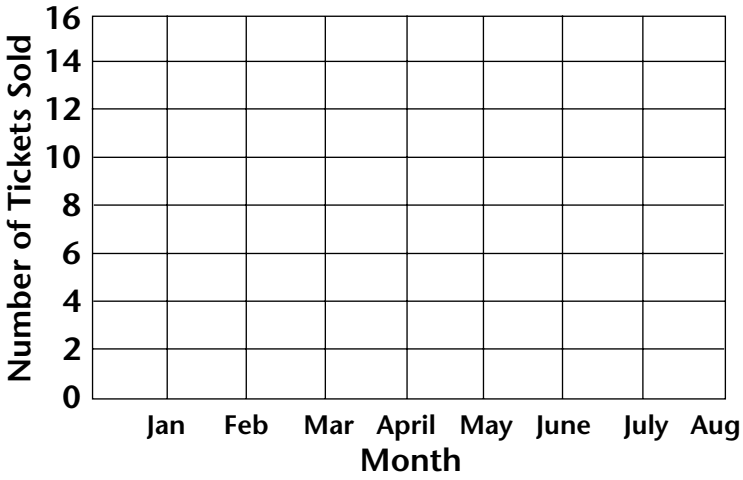
EXAMPLE Look at the data. For each month, plot the point showing the number of tickets sold each month. Draw a line from point to point.

Anna Marie's ticket sales for the year	
January	12
February	9
March	7
April	15
May	11
June	8
July	2
August	1

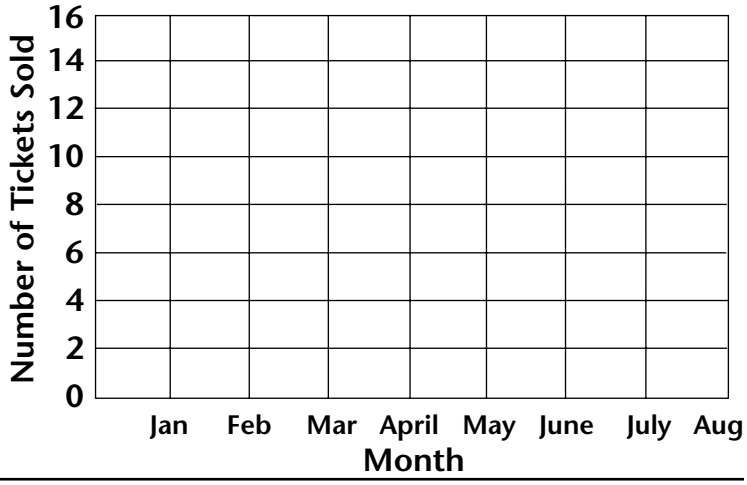


Directions Write titles. Construct line graphs for the following data.

Jeanne's ticket sales for the year	
January	14
February	10
March	16
April	7
May	9
June	10
July	2
August	8



Michael's ticket sales for the year	
January	11
February	5
March	8
April	7
May	4
June	9
July	2
August	7

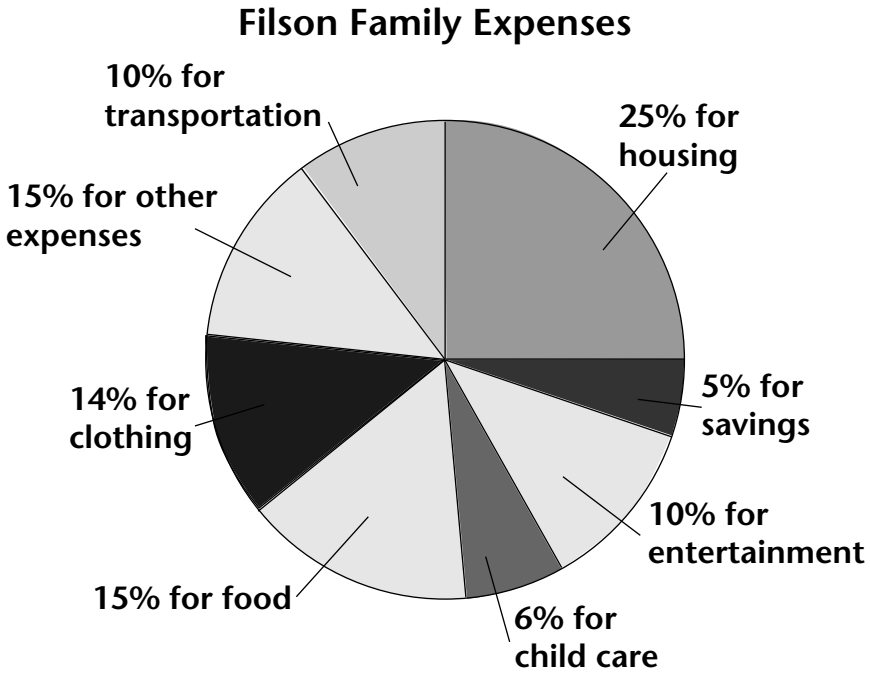


Reading Circle Graphs

EXAMPLE On what do the Filsons use the most money?

Look at the graph sections.
Find the largest section.
Read its label.

The Filsons use the most amount of money for housing.



Directions Use the graph. Answer the following questions.

The Filson Family income for this budget is $39,000 per year.

1. What is the title of this graph? _____

2. The Filsons used least amount of money on what category? _____

3. How much money is spent on housing? _____

4. How much money is spent on clothing? _____

5. How much is spent on child care? _____

6. What percent of the Filsons' income is transportation? _____

7. Transportation and food cost how much per year? _____

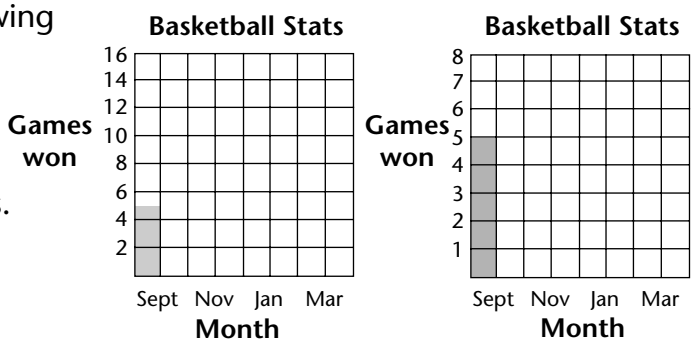
8. How much would the savings be if the income were $40,000? _____

Misleading Graphs

EXAMPLE

On each graph, draw a bar showing 5 games won in September.

Find September on the graphs.
Write a title for each graph.
Shade sections to show 5 games.

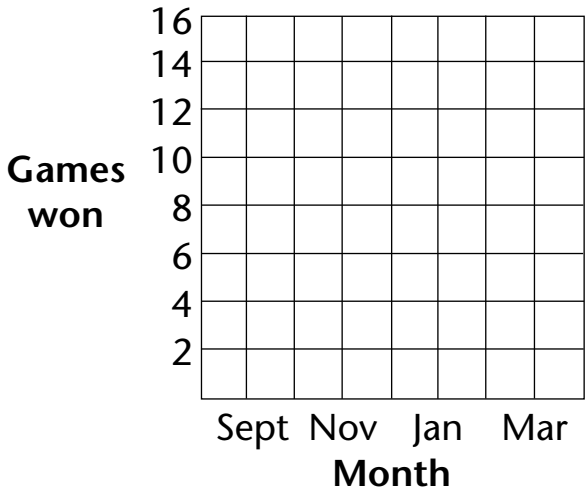


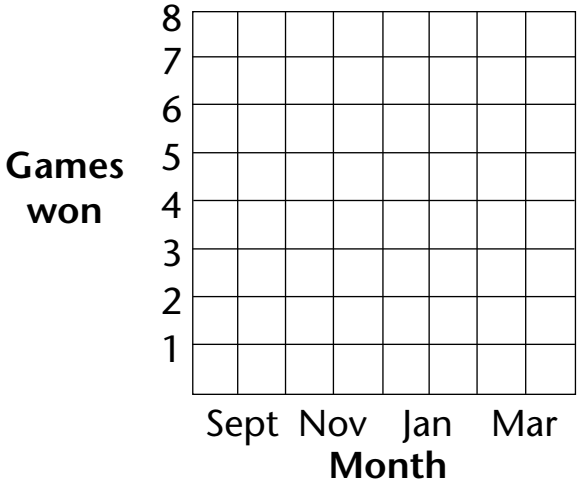
Springbrook High School Games Won

Month	Games won
September	4 games
October	2 games
November	3 games
December	6 games
January	7 games
February	8 games

Directions Make the bar graphs. Then answer the questions.

1. Make 2 bar graphs for the data. Use the templates given below.
2. Give a title for each graph.
3. Why does graph 2 look better than graph 1?
4. Does one graph show the data better than the other?





Name Date Period

Scale Dimensions

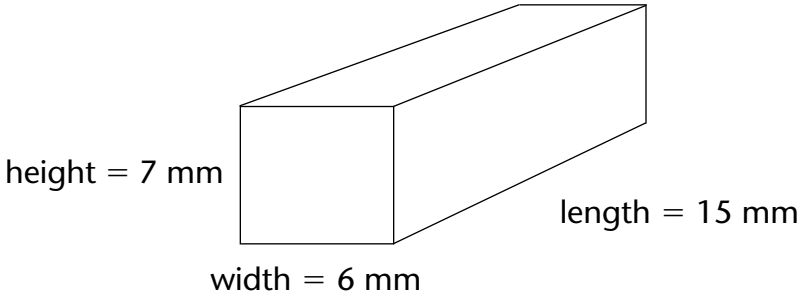
EXAMPLE The building block shown below is a scale model of a much bigger block using a 1:300 scale.
How wide is the actual building block?

Set up a proportion.

$\frac{1}{300} = \frac{6}{n}$

$300 \times 6 = n$

1,800 mm $= n$ is the width of the actual building block



Directions Use the ratios provided to solve for the actual dimensions.

1. Find the actual length and height using a 1:300 ratio.

_____

_____

2. Solve for the three components using a ratio of 1:250.

_____

_____

_____

3. Solve for the three components using a ratio of 1:75.

_____

_____

_____

4. Solve for the actual width using a ratio of 1:22.

_____

Drawings to Scale

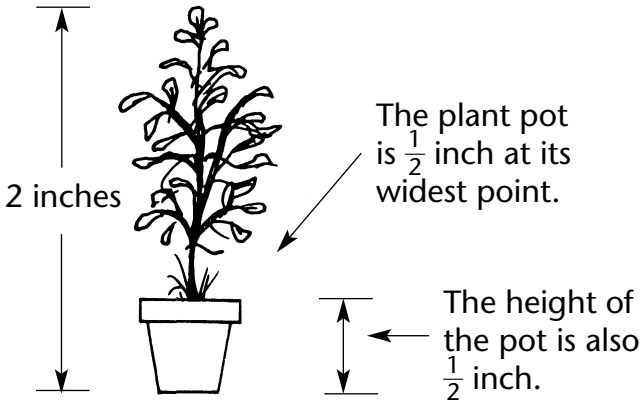
EXAMPLE The plant measures 2 inches high. The scale ratio is 1:15. What is the actual height?

$\frac{1}{15} = \frac{2}{n}$

$15 \times 2 = n$

$30 \text{ inches} = n$

The actual height is 30 inches.



Directions Compute the measurements for the different scale ratios.

1. Solve for the height of the plant using a scale ratio of 1:40. _____

2. Use a scale ratio of 1:19 to determine the actual height of the pot. _____

3. Use a scale ratio of 1:5 to determine the actual height of the plant. _____

4. Use a scale ratio of 1:25 to determine the actual height of the pot. _____

5. Solve for the width of the pot using a scale ratio of 1:10. _____

6. Solve for the actual width of the pot using a scale ratio of 1:22. _____

7. Solve for the actual width of the pot using a scale ratio of 1:30. _____

8. Use a scale ratio of 1:15 to determine the actual height of the plant. _____

Name Date Period

Working with Floor Plans

EXAMPLE What is the actual width of the den?

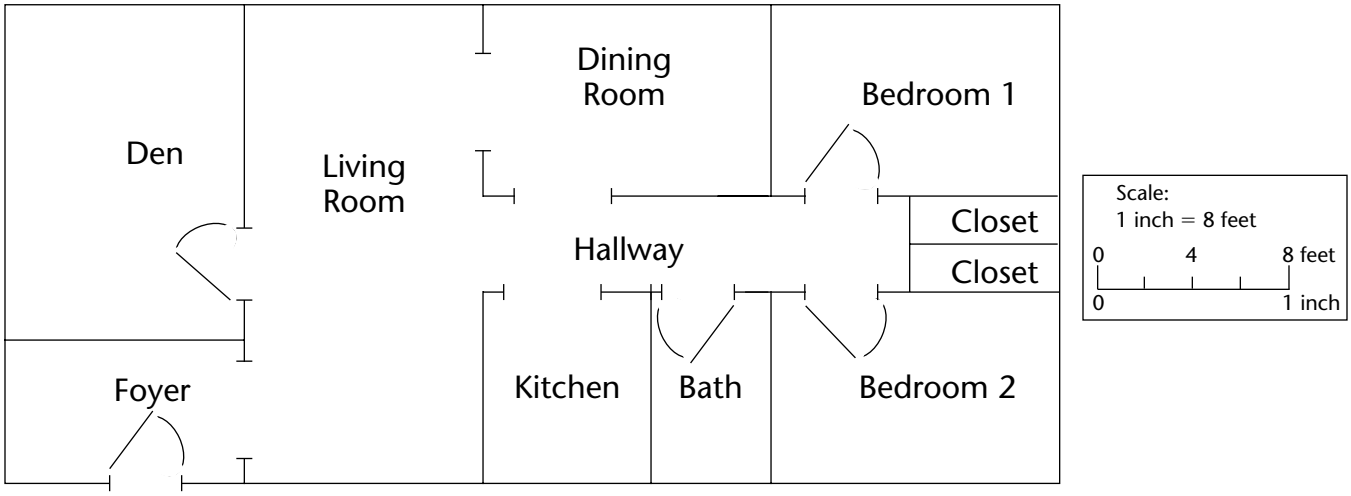
Measure the width in inches.
Solve for length.

width = $1\frac{1}{4}$ in.

$1\frac{1}{4} \times 8 =$ width

$\frac{5}{4} \times 8 = 10$ feet actual width

Directions Use a ruler and this floor plan to answer the following questions.



1. What are the real-life dimensions of the living room? _____

2. If you wanted to tile the kitchen with 1-square foot tiles, how many tiles would you need? _____

3. Tile costs $1.40 per square foot. How much will it cost to tile the kitchen? _____

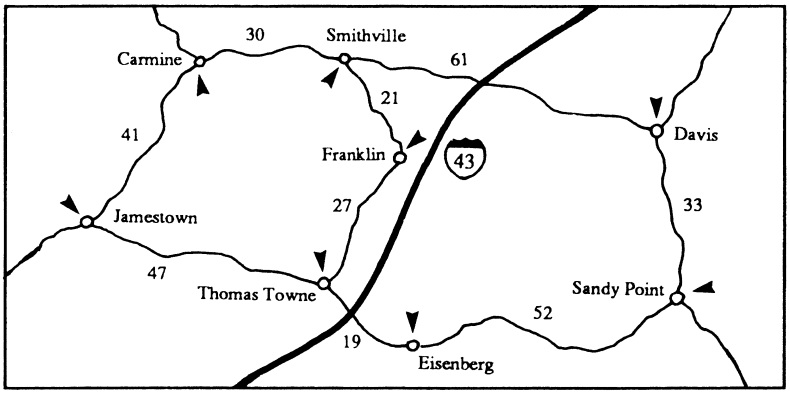
4. How many square yards would be needed to carpet the hallway? _____

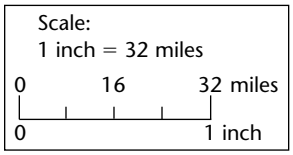
Measuring Distances on Maps

EXAMPLE What is the actual straight-line distance from Jamestown to Carmine?

Measure the distance.
Write an equation. Solve.
1 in. × 32 miles = straight-line distance
1 × 32 = 32
32 miles = straight-line distance

Directions Use your ruler to measure the map distance between the cities to the nearest eighth inch. Record this map distance. Then find the actual straight-line distance in miles between the cities. Record this actual distance. Finally, find the shortest road distance between the cities and record it.



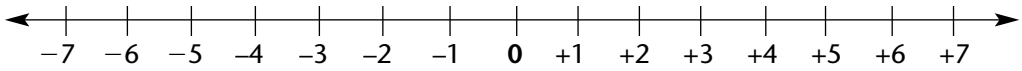


Cities	Map Distance (inches)	Straight Line Distance (miles)	Shortest Road Distance (miles)
1. Jamestown to Eisenberg			
2. Franklin to Thomas Towne			
3. Carmine to Davis			
4. Davis to Eisenberg			

Name Date Period

Integers

EXAMPLES Numbers get larger from left to right.



A number plus its opposite equals zero.

$-3 + (+3) = 0$ $7 + (-7) = 0$ $5 + (-5) = 0$ $-5 + 5 = 0$

Review symbols.

$<$ means less than. $2 < 6$ reads 2 is less than 6.

$>$ means greater than. $8 > 5$ reads 8 is greater than 5.

Directions Write the opposite for these numbers.

1. −13 _____ **4.** +9 _____

2. −63 _____ **5.** −5 _____

3. +4 _____ **6.** −20 _____

Directions Use the number line to help you compare the integers in each pair using $<$ or $>$.

7.	−16	+5	**15.**	+9	0
8.	+8	−9	**16.**	−1	0
9.	−1	+1	**17.**	+23	−1
10.	−20	−1	**18.**	−12	−10
11.	−1	+11	**19.**	−5	+5
12.	+10	−10	**20.**	−7	−6
13.	+6	+3	**21.**	−9	0
14.	−6	−7	**22.**	+3	−4

Adding Integers

EXAMPLES Name the absolute value of $|-15|$.

Absolute value is distance from 0.
$|-15|$ absolute value $= 15$

Add the integers.
$+14 + (-10) = 4$

Directions Give the absolute value for each number.

1. $|+42|$ _____ **6.** $|-20|$ _____ **11.** $|+11|$ _____

2. $|+13|$ _____ **7.** $|-19|$ _____ **12.** $|-44|$ _____

3. $|-29|$ _____ **8.** $|-3|$ _____ **13.** $|+56|$ _____

4. $|-1|$ _____ **9.** $|-102|$ _____ **14.** $|+18|$ _____

5. $|-22|$ _____ **10.** $|-13|$ _____ **15.** $|-31|$ _____

Directions Find the sums.

16. $+7 + (+6)$ _____ **24.** $+3 + (-8)$ _____

17. $-7 + (+6)$ _____ **25.** $-11 + (-11)$ _____

18. $+1 + (+12)$ _____ **26.** $-21 + (-72)$ _____

19. $-2 + (-55)$ _____ **27.** $+10 + (-13)$ _____

20. $-4 + (-6)$ _____ **28.** $-11 + (-11)$ _____

21. $-10 + (-19)$ _____ **29.** $+15 + (-14)$ _____

22. $-12 + (-8)$ _____ **30.** $+81 + (-80)$ _____

23. $-7 + (+8)$ _____ **31.** $-8 + (+8)$ _____

Name Date Period

Positive and Negative Numbers

EXAMPLES

Add 2 numbers. Then add the third.
$-15 + (+17) + (-8)$
$+2 + (-8)$
-6

Subtract by adding the opposite.
$-7 - (18)$
$-7 + (-18) = -25$

Directions Find the sums.

1. $-6 + (+2) + (-10) =$ _____

2. $+7 + (-17) + (+10) =$ _____

3. $-7 + (-23) + (-15) =$ _____

4. $-82 + (-26) + (+34) =$ _____

5. $-29 + (+36) + (+21) =$ _____

6. $-14 + (+25) + (-76) =$ _____

7. $-28 + (-36) + (-23) =$ _____

8. $+14 + (-81) + (+31) =$ _____

9. $-42 + (+14) + (-36) =$ _____

10. $+54 + (-16) + (-26) =$ _____

Directions Find the answers.

11. $-4 - (+16) =$ _____

12. $+62 - (-48) =$ _____

13. $-24 - (-39) =$ _____

14. $-26 - (+46) - (-14) =$ _____

15. $-25 + (-23) - (-35) =$ _____

16. $-64 - (+28) + (+52) =$ _____

17. $+36 + (-12) - (-28) =$ _____

18. $-26 - (+14) + (-12) =$ _____

19. $-32 + (-8) - (-32) =$ _____

20. $-32 - (-19) + (+19) =$ _____

Word Problems

EXAMPLE Write an addition problem.
Remember a number without a sign is positive.

16, −4, −5, +10
16 + (−4) + (−5) + (+10) = +17

Directions Write an addition sentence for each set. Then solve.

1. −10, −3, +17, −2, +6 _____

2. −14, +15, +16, −13, +2 _____

3. −19, +11, −20, −12, +15, −10 _____

4. +18 , +11 , +17, 11 _____

5. +9, +2, −8, +13, +10, −8 _____

6. +22, −20, +14, −13 _____

Directions Write an addition sentence for each problem. Then solve.

7. Jacob deposited these amounts in the bank: $21.00, $25.50, and $14.75. He wrote checks for $15.00 and $7.98. What is his balance?

_____

8. Kim and Lou had part-time jobs cutting grass. By the end of the summer, they had spent $25.00 on gas, $12.00 on new lawn mower blades, and $5.95 on a wheel. They had received checks for $20.00, $45.00, $17.00, and $35.00. What was their profit after expenses?

_____

Multiplying Numbers

EXAMPLES

The product of two numbers with like signs is positive.

$-6(-2) = +12$ $+3(+9) = +27$

The product of two numbers with unlike signs is negative.

$-2(+6) = -12$ $-3(+9) = -27$

Directions Solve for the products.

1. $-11(-1)$ _____

2. $-5(+10)$ _____

3. $-3(-4)(-2)$ _____

4. $-8(+2)(-1)$ _____

5. $-2(-3)(+4)$ _____

6. $-1(+1)(-1)(+1)(-1)$ _____

7. $+8(-1)(-2)$ _____

8. $-6(-7)(+3)(-4)$ _____

9. $-2(+4)(+4)(-2)$ _____

10. $+4(-5)(+3)(-4)$ _____

11. $-8(+2)(-1)(-2)$ _____

12. $-4(-5)(-6)(-1)$ _____

13. $-3(-4)$ _____

14. $-12(+2)$ _____

15. $+2(+4)(-1)(-1)$ _____

16. $+7(-2)(-5)$ _____

17. $-23(+2)(-2)$ _____

18. $+3(-1)(-2)(+3)$ _____

19. $-1(+1)(-1)(+1)(+1)$ _____

20. $+6(-6)(-2)(-3)$ _____

21. $+7(-7)(-2)(-3)$ _____

22. $-3(-7)(-4)(-2)$ _____

23. $-2(-3)(+4)(+5)$ _____

24. $+2(-4)(-2)(-3)$ _____

25. $+10(+3)$ _____

26. $-16(+2)(-1)$ _____

Name Date Period

Properties of Addition and Multiplication

EXAMPLES

Commutative Property of Addition and Multiplication

$6 + 7 = 7 + 6$
$13 = 13$ Both sums equal 13.

$-2 \times (-3) = -3 \times (-2)$
$+6 = +6$
Both products equal 6.

Associative Property of Addition and Multiplication

$(3 + 5) + 6 = 3 + (5 + 6)$
$8 + 6 = 3 + 11$
$14 = 14$

$(4 \times 2) \times 3 = 4 \times (2 \times 3)$
$8 \times 3 = 4 \times 6$
$24 = 24$

Distributive Property of Multiplication with respect to Addition and Subtraction

$2 \times (3 + 4) = 2 \times 3 + 2 \times 4$
$2 \times 7 = 6 + 8$
$14 = 14$

$2 \times (8 - 4) = 2 \times 8 - 2 \times 4$
$2 \times 4 = 16 - 8$
$8 = 8$

Directions Express using the commutative property.

1. $7 \times 6 =$ _____

2. $-3(+4) =$ _____

3. $8 + 2 =$ _____

4. $3 + 19 =$ _____

Directions Express using the associative property.

5. $(4 + 9) + 11 =$ _____

6. $(10 + 12) + 1 =$ _____

7. $(3 \times 8) \times 10 =$ _____

8. $(2 \times 18) \times 3 =$ _____

Directions Express using the distributive property.

9. $6 \times (5 + 3)$ _____

10. $9 \times (4 + 2)$ _____

11. $8 \times (9 + 12)$ _____

12. $3 \times (8 - 2)$ _____

13. $11 \times (17 - 7)$ _____

14. $6 \times (10 - 3)$ _____

Dividing Integers

EXAMPLES

The quotient of two numbers with like signs will be positive.

$-20 \div (-4) = +5$ $+25 \div (+5) = +5$ Both answers are positive.

The quotient of two numbers with unlike signs will be negative.

$+27 \div (-9) = -3$ $\frac{-15}{+3} = -5$ Both answers are negative.

Directions Solve for the quotients.

1. $\frac{-64}{-8}$ _____ **5.** $\frac{-4}{-8}$ _____ **9.** $\frac{+230}{-115}$ _____

2. $\frac{-44}{+11}$ _____ **6.** $\frac{+45}{-9}$ _____ **10.** $\frac{+5}{-25}$ _____

3. $\frac{-100}{-10}$ _____ **7.** $\frac{+34}{-17}$ _____ **11.** $\frac{-72}{-9}$ _____

4. $\frac{-144}{-12}$ _____ **8.** $\frac{-120}{-12}$ _____ **12.** $\frac{+90}{+45}$ _____

13. $+63 \div (-7) =$ _____ **17.** $+63 \div (+7) =$ _____

14. $-26 \div (+5) =$ _____ **18.** $-12 \div (-12) =$ _____

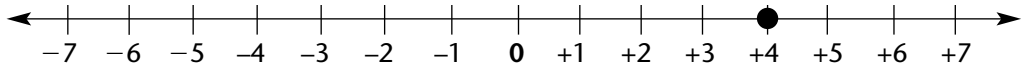
15. $+120 \div (-10) =$ _____ **19.** $-85 \div (-5) =$ _____

16. $+100 \div (-5) =$ _____ **20.** $+125 \div (-25) =$ _____

Variables and the Number Line

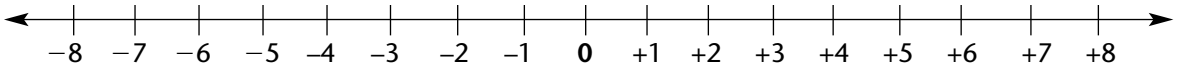
EXAMPLE Find the number on the number line.

$x = 4$

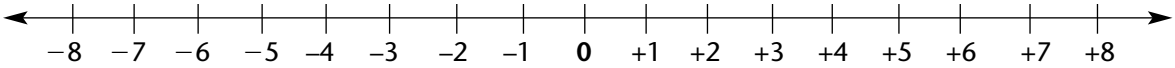


Directions Graph the values of x on the number lines provided.

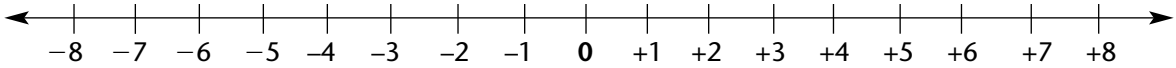
1. $x = -7$



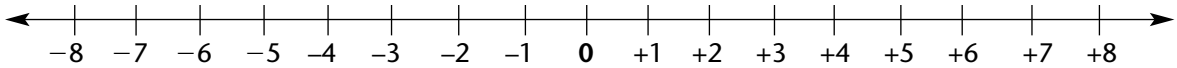
2. $x = +6$



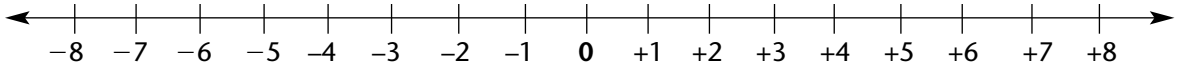
3. $x = +2$



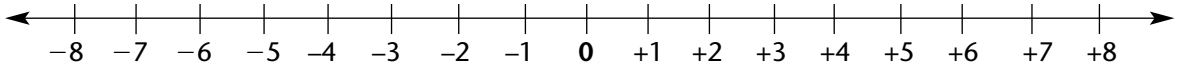
4. $x = +7$



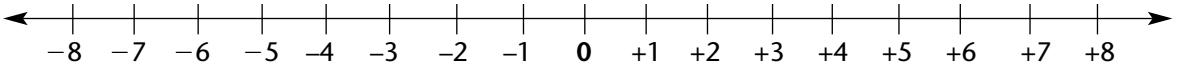
5. $x = +8$



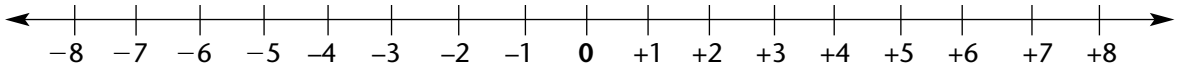
6. $x = +5$



7. $x = +1$



8. $x = -1$

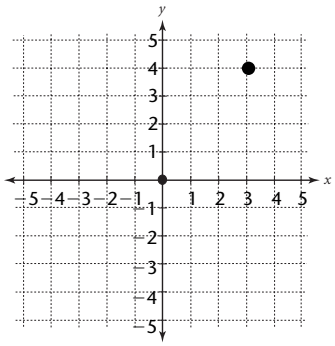


Coordinate Graphing

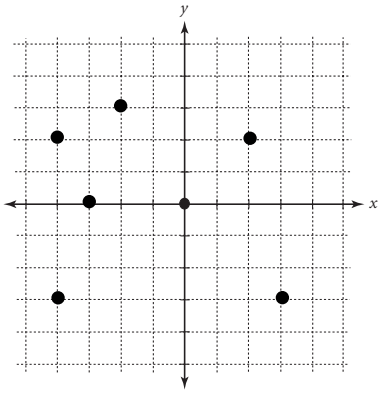
EXAMPLE

List the coordinates.

Number the *x* and *y* axes.
Move right to find *x* coordinate.
Move up to find *y* coordinate.
List *x* coordinate first.
point (3, 4)

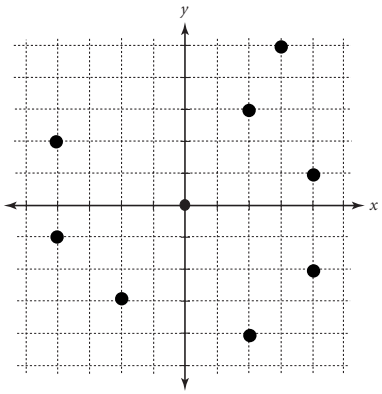


Directions List the coordinates for each point.



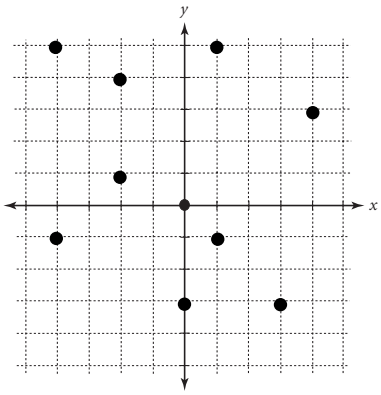
1. _____

_____



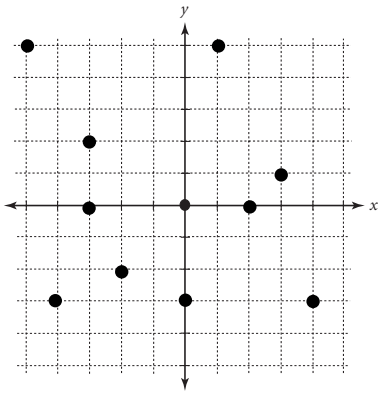
3. _____

_____



2. _____

_____



4. _____

_____

Name Date Period

Solving Equations Using Addition and Subtraction

EXAMPLE

$$x - 4 = +3$$
$$+4 \quad +4$$
$$x = 7$$

Directions Solve for the variable. Show steps.

1. $x - 14 = -3$

2. $r - 22 = 6$

3. $f - 13 = -5$

4. $v + 6 = -10$

5. $v - 17 = 0$

6. $f - 1 = 11$

7. $k + 3 = 0$

8. $25 + x = -4$

9. $3 = x - 1$

10. $c - 25 = -20$

11. $v - 10 = 0$

12. $v - 3 = -10$

13. $2 + x = -30$

14. $1 = x - 12$

15. $h - 27 = -25$

16. $v + 2 = 11$

Name Date Period

Working with Integers

EXAMPLES

Multiply.

$+4 \times (-4) = -16$

Divide.

$-16 \div (-2)$

$\frac{-16}{-2} = +8$

Solve for x.

$2x - 6 = 16$

$2x = 16 + 6$

$2x = 22$

$x = 11$

Directions Find the answers.

1. $+6 \times (-3) =$ _____

2. $-54 \div (-6) =$ _____

3. $+11 \times (+8) =$ _____

4. $-21 \times (-6) =$ _____

5. $+124 \div (-4) =$ _____

6. $+207 \div (+9) =$ _____

7. $-125 \div (+5) =$ _____

8. $-16 \div (-4) =$ _____

9. $+23 \times (-16) =$ _____

10. $-128 \div (+8) =$ _____

11. $+17 \times (-21) =$ _____

12. $+64 \div (-4) =$ _____

Directions Solve for the missing number.

13. $x - 11 = 14$ $x =$ _____

14. $6 + y = -12$ $y =$ _____

15. $7a = -56$ $a =$ _____

16. $c + (-18) = -32$ $c =$ _____

17. $x \div 6 = -25$ $x =$ _____

18. $14 - b = 23$ $b =$ _____

19. $7p = -45$ $p =$ _____

20. $26 + n = -25$ $n =$ _____

21. $q - 16 = 28$ $q =$ _____

22. $25 \div t = 25$ $t =$ _____

23. $23 + z = -76$ $z =$ _____

24. $9a = -207$ $a =$ _____

Equations

EXAMPLE

Sometimes equations might appear to be turned around. Consider the equation $4x - 2 = 18$. It could also be expressed as $18 = 4x - 2$. You solve the equation using the same methods.

$$\begin{array}{rr} 4x - 2 = 18 & 18 = 4x - 2 \\ +2 \quad +2 & +2 \qquad +2 \\ 4x = 20 & 20 = 4x \end{array}$$

$$\frac{4x}{4} = \frac{20}{4} \qquad \frac{20}{4} = \frac{4x}{4}$$

$$x = 5 \qquad 5 = x \text{ or } x = 5$$

Directions Solve these equations.

1. $14 = x + 2$ _____

2. $3 = -3 + a$ _____

3. $5 = -4 + 5x$ _____

4. $-3 = b - 1$ _____

5. $-5 = 3 + b$ _____

6. $-3 = +23 + c$ _____

7. $13 = b - 2$ _____

8. $20 = 4 + a$ _____

9. $0 = -5 + 3a$ _____

10. $12 = -12 + x$ _____

11. $10 = -3 + 6a$ _____

12. $0 = 2n + 12$ _____

13. $-13 = 9n + 5$ _____

14. $10 = 5n + 2$ _____

15. $-1 = +1 + z$ _____

16. $34 = 22 - 5x$ _____

17. $-7 = 2 + 8z$ _____

18. $-9 = -2 + 2x$ _____

19. $-1 = -1 + x$ _____

20. $+13 = -3 + 2a$ _____

21. $-3 + 5 = 5 + a$ _____

22. $+10 = 4x + 2$ _____

23. $-25 = 5b + 10$ _____

24. $-2 - 3 = -5 + c$ _____

25. $0 = -3 + 10x$ _____

26. $-2 = 4 + 3z$ _____

27. $-3 = -3 + 3x$ _____

28. $-3 = -3 + c$ _____

29. $-13 = -3 + 2a$ _____

30. $-4 + 4 = 5 + 4a$ _____

Combining Like Terms

EXAMPLE Add to combine the like terms.

$-2x - 18y - 4x + 10y$
$-2x + (-4x) = -6x$
$-18y + 10y = -8y$
$-6x - 8y$

Directions Combine like terms.

1. $+3a - 4a + 5 + 6$

2. $+10a - 10a - 3 + 4$

3. $+2a - 8c - 9c + 10a$

4. $-3x + 2x + 4x + 10$

5. $-2a - 3a + 8a - 2$

6. $-2a + 8a - a - 1 - 2$

7. $-8 - 5f + 17f + 4 - 1$

8. $2a - 8 - 2a + 4c - 9c$

9. $+2x - 3x + 2 + 3x$

10. $+14x - 10x + 4 - 2$

11. $-c + c - 12y - 8c$

12. $-3 + 8 - x - x$

13. $+w + 2w + 2x - c$

14. $-5 - 8 + 2 - 3a - 5a$

15. $-2a + 3a - 3c + 5$