Going into Pre Algebra Summer Math Packet

Instructions

1. Plan to complete 3-5 sheets per week.
2. Show all work on a separate sheet of paper.
3. Answers are provided at the end of the booklet.

Patterns

Carefully study the patterns of numbers below. Complete each pattern.

1. 10, 100, 1,000, 10,000, 100,000, 1,000,000, 10,000,000.
   (×10, ×10, ×10, ×10, ×10, ×10)

2. 17, 15, 25, 23, 33, 31, _____, _____, _____, _____.

3. 800, 80, 8, 0.8, 0.08, _____, _____, _____, _____.

4. 1, 4, 9, 16, 25, _____, _____, _____, _____, _____.

5. 1, 6. 5, 10, 9, 14, 13, _____, _____, _____, _____.

6. $\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6}, \frac{6}{7}$ _____, _____, _____, _____.

7. 7, 21, 63, 189, _____, _____, _____, _____.

8. 125, 120, 115, 110, _____, _____, _____, _____.

9. 3, 6, 7, 14, 15, 30, 31, _____, _____, _____, _____.

10. 2, 20, 4, 40, 8, 80, 16, _____, _____, _____, _____.

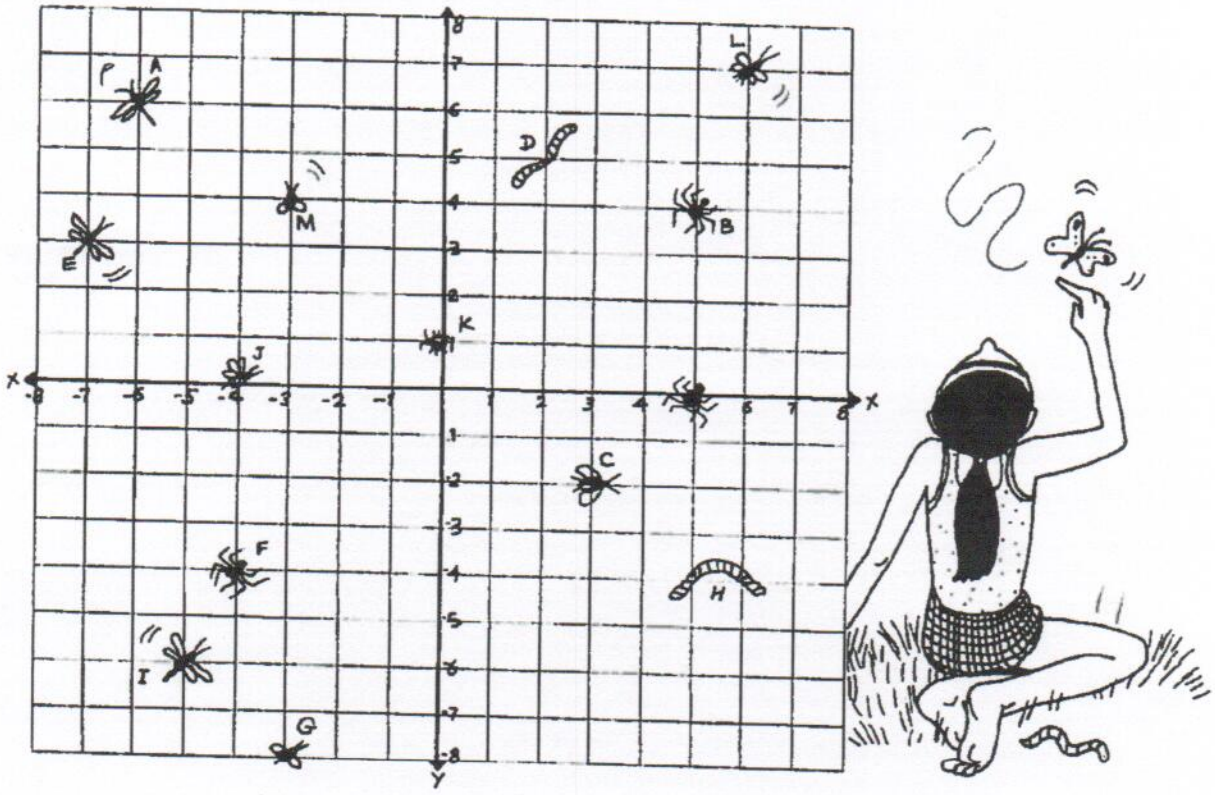
CHALLENGE! The following is a special pattern called the Fibonacci sequence. See if you can discover and complete this interesting pattern.

1, 1, 2, 3, 5, 8, 13, _____, _____, _____, _____, _____.

CREATURE COORDINATES

Bugs are a fact of life on a camping trip. Lightning bugs, beetles, spiders, mosquitoes, and other critters keep the campers company.

Find the location of the creatures on the coordinate grid. Write an ordered pair of numbers to show the location (coordinates) for each bug.



Write an ordered pair for each.

1. A (-6, 6)
2. B _____
3. C _____
4. D _____
5. E _____
6. F _____
7. G _____

Write the letter.

8. What creature is at (6, 7)?
   L
9. What creature is at (–4, 0)?
   _____
10. What creature is at (5, –4 and 6, –4)?
    _____
11. What creature is at (–5, –6)?
    _____
12. What creature is at (0, 1)?
    _____

Draw a creature at each of these locations:

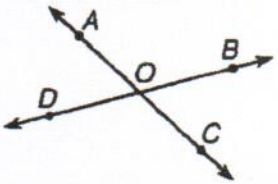
13. a spider at (5, 0)
14. a fly at (–8, –8)
15. a dragonfly at (0, –6)
16. a mosquito at (–7, –2)
17. a spider at (–2, 6)
18. a worm at (4, –7)
19. a fly at (–6, –2)
20. a bee at (–1, –2)

What Do You Call It When 50 People Stand on a Wooden Dock?

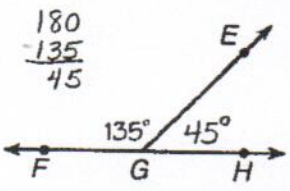
Cross out the letters above each correct answer. When you finish, write the remaining letters in the spaces at the bottom of the page.

In Exercises 1-4, fill in the blank.

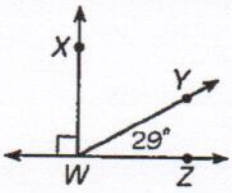
1. If the sum of the measures of two angles is 180°, the angles are _____.
2. If the sum of the measures of two angles is 90°, the angles are _____.
3. When two angles in a plane share a vertex and a side but no common interior points, they are called _____ angles. Example: $\angle AOB$ and $\angle AOD$.
4. When two lines intersect, they form two pairs of "opposite" angles called _____ angles. Example: $\angle AOB$ and $\angle COD$.



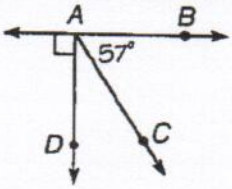
In Exercises 5-14, use the given angle measures to find the required ones.



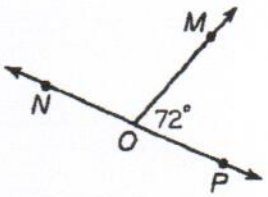
5. $m\angle EGH$



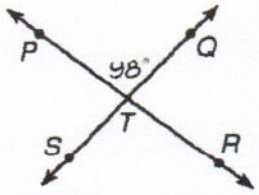
6. $m\angle XWY$



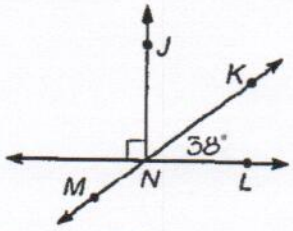
7. $m\angle DAC$



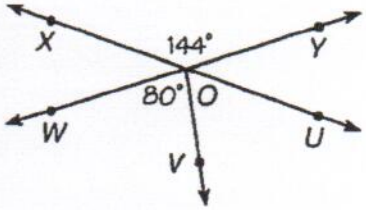
8. $m\angle MON$



9. $m\angle STR$ 10. $m\angle PTS$



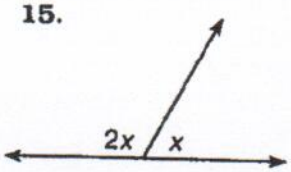
11. $m\angle JNK$ 12. $m\angle MNL$



13. $m\angle YOU$ 14. $m\angle UOV$

In Exercises 15-18, use an algebraic equation to find the measure of the angle labeled *x*.

15.



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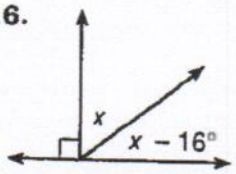

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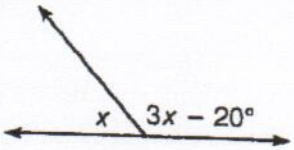
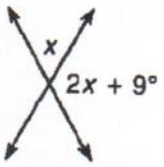
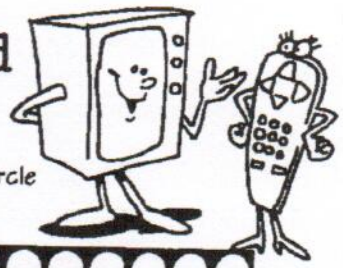


18.



IT	TH	EY	DO	PI	LE	CK	UP	ER	AN	PR	OP
vertical	64°	52°	61°	55°	57°	108°	82°	39°	53°	107°	supplementary
AN	**IC**	**ES**	**IT**	**ON**	**EE**	**SU**	**RF**	**DO**	**RE**	**CK**	**EN**
adjacent	98°	137°	60°	45°	142°	28°	50°	33°	48°	36°	complementary

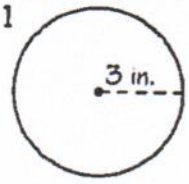
What Happened When the TV Set Asked the Remote Control for a Date?



Find each answer in the answer column. Write the letter of the answer in the circle that contains the exercise number. Most answers are rounded. Use 3.14 for π.

Use the diameter (d) or radius (r) to find the area.

1



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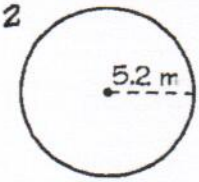

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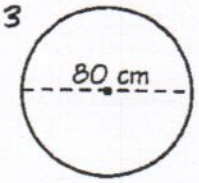

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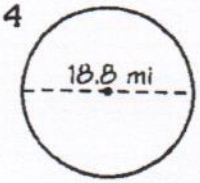


5 $r = 12$ in.

6 $r = 0.66$ mi

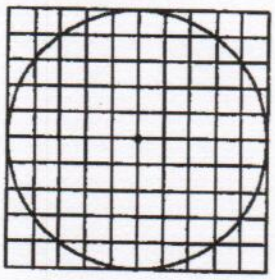
7 $d = 7.5$ m.

8 $d = 2$ cm

Solve.

9 Radio station KLUV broadcasts in all directions to a distance of 60 mi. What is the area over which the station can be heard?

10 How many squares are inside the circle below?



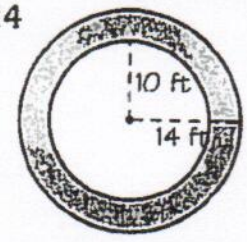
11 A fugitive has escaped in a train wreck. The police believe he could not have traveled more than 7 mi in any direction from the wreck. How many square miles must be searched?

12 A manhole cover has a diameter of 3 ft. It weighs 8.2 lb per square foot. How much does the manhole cover weigh?

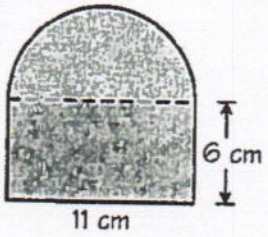
13 A 12-inch diameter pizza is cut into 8 equal pieces. What is the area of each piece?

Find the area of the shaded region.

14



15



16

Answers 1-8

L 269.4 mi^2
O 5024 cm^2
S 44.2 m^2
D 28.3 $in.^2$
F 1.54 mi^2
M 452.2 $in.^2$
T 5196 cm^2
E 84.9 m^2
H 3.14 cm^2
A 48.3 m^2
U 1.37 mi^2
Y 438.3 $in.^2$
N 277.5 mi^2

Answers 9-16

S 124.3 cm^2
H 153.9 mi^2
A 62.4 lb
T 301.4 ft^2
F 18.9 $in.^2$
E 78.5
I 57.9 lb
D 113.5 cm^2
L 82.4
W 11,304 mi^2
R 27.5 $in.^2$
B 326.4 ft^2
N 14.1 $in.^2$
O 9285 mi^2

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

Adding and Subtracting Mixed Numbers

$3\frac{1}{2} + 1\frac{3}{8} = 3\frac{4}{8} + 1\frac{3}{8} = 4\frac{7}{8}$

Solve each problem. Write the answer in simplest form.

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

$4\frac{5\cdot3}{7\cdot3}$ $2\frac{2\cdot7}{3\cdot7}$

$4\frac{15}{21} - 2\frac{14}{21} = 2\frac{1}{21}$

2. $9\frac{3}{5} + 4\frac{2}{3} =$

3. $7\frac{1}{2} - 2\frac{7}{10} =$

4. $17\frac{3}{4} - 8\frac{2}{5} =$

5. $16\frac{1}{4} - 7\frac{5}{8} =$

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

7. $3\frac{7}{12} + 7\frac{5}{6} =$

8. $4\frac{1}{8} - 3\frac{1}{2} =$

9. $8\frac{1}{8} + 5\frac{3}{4} =$

10. $12\frac{7}{9} + 3\frac{2}{3} =$

11. $4\frac{1}{7} - 3\frac{1}{5} =$

12. $6\frac{4}{5} + 2\frac{3}{9} =$

13. $1\frac{9}{12} - 1\frac{3}{4} =$

14. $4\frac{8}{9} + 2\frac{5}{6} =$

15. $4\frac{3}{6} + 7\frac{3}{8} =$

16. $5\frac{1}{2} - 2\frac{2}{7} =$

17. $2\frac{8}{10} - 1\frac{5}{15} =$

18. $11\frac{4}{5} - 3\frac{5}{6} =$

Did You Hear About . . .

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	???

Find each answer in the answer column. Write the word next to the answer in the box containing the problem number.

Simplify.

1 $2\frac{2}{3} - 1\frac{1}{2}$

2 $-4\frac{1}{2} + 1\frac{3}{10}$

3 $-3\frac{1}{3} - 2\frac{3}{4}$

4 $3\frac{5}{8} + \left(-5\frac{1}{4}\right)$

5 $5\frac{1}{2} + 1\frac{4}{9}$

6 $-4\frac{3}{5} + \left(-2\frac{2}{3}\right)$

7 $3\frac{5}{6} - 7\frac{1}{2}$

8 $-2\frac{1}{4} + 3\frac{4}{5} + 4$

9 $6\frac{1}{2} - \left(-1\frac{7}{8}\right)$

Solve.

10 $x + 4\frac{1}{5} = 7\frac{7}{10}$

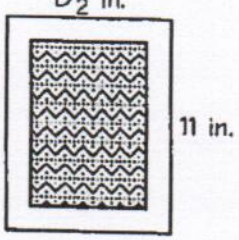
11 $3\frac{3}{4} + t = -2\frac{1}{6}$

12 $n - 5\frac{5}{9} = -8\frac{1}{3}$

13 Mr. Glock's gas tank holds $16\frac{1}{2}$ gal when full. When Mr. Glock drove into a gas station, the tank contained $4\frac{2}{5}$ gal. How much gas was needed to fill the tank?

14 A cabinet has shelves that are $12\frac{1}{2}$ in. apart. On one shelf, Katherine stacked a CD player that is $4\frac{5}{8}$ in. high on top of an amplifier that is $6\frac{3}{4}$ in. high. How much space was left above the CD player?

15 A sheet of paper is $8\frac{1}{2}$ in. wide and 11 in. long. The sheet is printed with a margin $1\frac{1}{4}$ in. wide on all four sides. Find the perimeter of the printed part of the page.



$9\frac{1}{8}$ • WHEN	$-2\frac{4}{9}$ • OVER
$-6\frac{1}{12}$ • RIVER	$-5\frac{11}{12}$ • TAKE
$5\frac{11}{20}$ • DIET	$-1\frac{5}{8}$ • THAT
$-7\frac{4}{15}$ • ON	$1\frac{1}{6}$ • THE
$5\frac{7}{20}$ • TRIP	$3\frac{1}{2}$ • TO
$-3\frac{2}{3}$ • A	$-3\frac{1}{5}$ • BIG
$-2\frac{7}{9}$ • OFF	$1\frac{3}{8}$ in. • BAD
29 in. • PONDS	$6\frac{17}{18}$ • WENT
$11\frac{4}{5}$ gal • SOME	$1\frac{1}{8}$ in. • FEW
$8\frac{3}{8}$ • JUST	$-5\frac{7}{12}$ • LOSE
$12\frac{1}{10}$ gal • A	27 in. • BANKS

Multiplying Fractions

rewrite

$1\frac{2}{5} \times 2\frac{1}{2} = \frac{7}{5} \times \frac{5}{2} = \frac{35}{10}$ or $3\frac{5}{10} = 3\frac{1}{2}$

rewrite

Solve each problem. Write the answer in simplest form.

1. $10\frac{2}{3} \times 7\frac{1}{8} =$

$10 \times 3 + 2 = 32$ $\quad 7 \times 8 + 1 = 57$

$\frac{32}{3} \times \frac{57}{8} = \frac{4}{1} \times \frac{19}{1} = 76$

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

3. $4\frac{5}{6} \times 5\frac{1}{7} =$

4. $\frac{3}{5} \times \frac{15}{18} =$

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

6. $2\frac{11}{13} \times 4\frac{2}{3} =$

7. $5\frac{1}{2} \times \frac{3}{11} =$

8. $3\frac{1}{5} \times 12\frac{1}{2} =$

9. $5\frac{2}{3} \times 8\frac{1}{4} =$

10. $7\frac{2}{7} \times 2\frac{1}{3} =$

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

12. $\frac{2}{3} \times \frac{21}{24} =$

13. $5\frac{3}{5} \times 2\frac{4}{7} =$

14. $7\frac{2}{3} \times 3\frac{1}{2} =$

15. $5\frac{3}{12} \times 2\frac{1}{7} =$

16. $9\frac{1}{3} \times 2\frac{1}{7} =$

17. $2\frac{3}{5} \times 1\frac{1}{4} =$

18. $2\frac{4}{7} \times 2\frac{3}{9} =$

Dividing Fractions

rewrite — invert and multiply

$$1\frac{2}{3} \div 2\frac{1}{5} = \frac{5}{3} \div \frac{11}{5} = \frac{5}{3} \times \frac{5}{11} = \frac{25}{33}$$

rewrite

Solve each problem. Write the answer in simplest form.

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

$6\frac{2}{3}$ $4\frac{4}{9}$

$\frac{20}{3} \div \frac{40}{9} = \frac{\cancel{20}^{1}}{\cancel{3}_{1}} \times \frac{9^{3}}{\cancel{40}_{2}} = \frac{3}{2} = 1\frac{1}{2}$

2. $3\frac{1}{3} \div 1\frac{5}{9} =$

3. $2\frac{7}{10} \div 3\frac{9}{15} =$

4. $4\frac{1}{2} \div 5\frac{1}{4} =$

5. $6\frac{3}{4} \div 2\frac{1}{2} =$

6. $2\frac{2}{6} \div 4\frac{2}{3} =$

7. $5\frac{2}{5} \div 4\frac{1}{2} =$

8. $7\frac{2}{7} \div 2\frac{2}{14} =$

9. $3\frac{1}{2} \div 4\frac{1}{3} =$

10. $2\frac{2}{3} \div 3\frac{4}{10} =$

11. $4\frac{1}{5} \div 3\frac{3}{5} =$

12. $5\frac{3}{5} \div 1\frac{5}{9} =$

13. $4\frac{3}{8} \div 2\frac{1}{12} =$

14. $7\frac{3}{4} \div 1\frac{1}{4} =$

15. $3\frac{3}{4} \div 1\frac{2}{3} =$

16. $3\frac{1}{5} \div 1\frac{6}{10} =$

17. $2\frac{2}{9} \div 4\frac{1}{6} =$

18. $4\frac{3}{5} \div 1\frac{3}{8} =$

Writing Fractions as Decimals

$\frac{1}{5} \longrightarrow 5\overline{)1.00} \longrightarrow \frac{1}{5} = 0.2$ Terminating

$\frac{1}{3} \longrightarrow 3\overline{)1.00} \longrightarrow \frac{1}{3} = 0.\overline{3}$ Repeating

Write each fraction as a decimal. Draw a line above repeating numbers in decimals.

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

$3\overline{)2.00}$ = .66 = $0.\overline{6}$
-18↓
20
-18

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

3. $\frac{4}{33}$

4. $\frac{13}{15}$

5. $\frac{28}{35}$

6. $\frac{6}{15}$

7. $\frac{11}{22}$

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

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

10. $\frac{8}{16}$

11. $\frac{23}{33}$

12. $\frac{12}{25}$

13. $3\frac{2}{3}$

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

15. $2\frac{3}{5}$

Ratios

2 to 8 $\longrightarrow \frac{2}{8} = \frac{1}{4}$

35 : 20 $\longrightarrow \frac{35}{20} = \frac{7}{4}$

5 out of 25 $\longrightarrow \frac{5}{25} = \frac{1}{5}$

Write each ratio as a fraction. Write the answer in simplest form.

1. 20 to 70 $\frac{20 \div 10}{70 \div 10} = \frac{2}{7}$

2. 14 to 43

3. 121:108

4. 51:102

5. 34 out of 82

6. 112:224

7. 21 to 45

8. 40: 231

9. 19 to 84

10. 237 to 32

11. 0.13 out of 1.69

12. 171 to 132

13. 150 to 275

14. 60 to 116

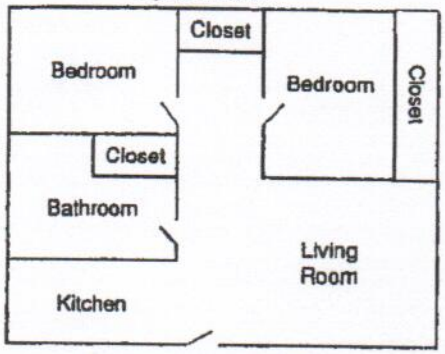
15. 12 out of 133

16. 50:125

Scale Drawings

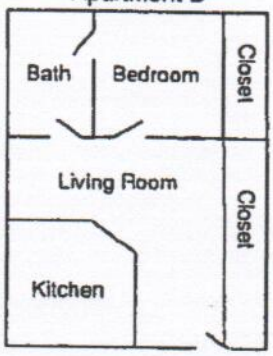
Use the scale drawings of two different apartments to answer the questions.

Apartment A



Scale: 1 inch = 12 feet

Apartment B



Scale: 1 inch = 16 feet

1. Which apartment has the greater area?

2. What is the difference in square feet between Apartment A and Apartment B?

3. How much more closet space is offered by Apartment B than Apartment A?

4. How much more bathroom space is offered by Apartment B than Apartment A?

5. A one-year lease for Apartment A costs $450 per month. A one-year lease for Apartment B costs $525 per month. Which apartment offers the greatest value in terms of the cost per square foot?

Proportions

$$\frac{2}{6} = \frac{x}{18}$$

$$2 \cdot 18 = 6x$$

$$\frac{36}{6} = \frac{6x}{6}$$

$$6 = x$$

Solve each proportion. Use cross–products.

1. $\frac{1}{4} = \frac{x}{8}$ $1 \cdot 8 = 4 \cdot x$ $\frac{8}{4} = \frac{4x}{4}$ $2 = x$

2. $\frac{20}{30} = \frac{5}{x}$

3. $\frac{18}{24} = \frac{12}{x}$

4. $\frac{80}{x} = \frac{48}{20}$

5. $\frac{5}{5} = \frac{5x}{5}$

6. $\frac{15}{45} = \frac{3}{x}$

7. $\frac{1.8}{x} = \frac{3.6}{2.8}$

8. $\frac{8}{x} = \frac{5}{2}$

9. $\frac{8}{6} = \frac{x}{27}$

10. $\frac{144}{6} = \frac{6x}{6}$

11. $\frac{x}{3} = \frac{8}{8}$

12. $\frac{36}{12} = \frac{x}{6}$

13. $\frac{0.14}{0.07} = \frac{x}{1.5}$

14. $\frac{6}{x} = \frac{6}{4}$

15. $\frac{4}{5} = \frac{x}{5}$

16. $\frac{16}{48} = \frac{x}{50}$

Problem Solving with Proportions

If 3 liters of juice cost \$3.75, how much does 9 liters cost?

$$\frac{\text{liters}}{\text{cost}} = \frac{3}{3.75} = \frac{9}{x}$$

$$3x = 3.75 \cdot 9$$

$$\frac{3x}{3} = \frac{33.75}{3}$$

$x = 11.25$

9 liters cost \$11.25

Solve each problem. Round each answer to the nearest cent.

1. If 3 square feet of fabric cost \$3.75, what would 7 square feet cost? \$8.75

$\frac{\text{fabric}}{\text{cost}}$ $\frac{3}{3.75} = \frac{7}{c}$ $3c = 3.75 \times 7$ $c = 8.75$

$\frac{3c}{3} = \frac{26.25}{3}$

2. A 12-ounce bottle of soap costs \$2.50. How many ounces would be in a bottle that costs \$3.75?

3. Four pounds of apples cost \$5.00. How much would 10 pounds of apples cost?

4. A 12-ounce can of lemonade costs \$1.32. How much would a 16-ounce can of lemonade cost?

5. J & S Jewelry company bought 800 bracelets for \$450.00. How much did each bracelet cost?

6. A dozen peaches costs \$3.60. How much did each peach cost?

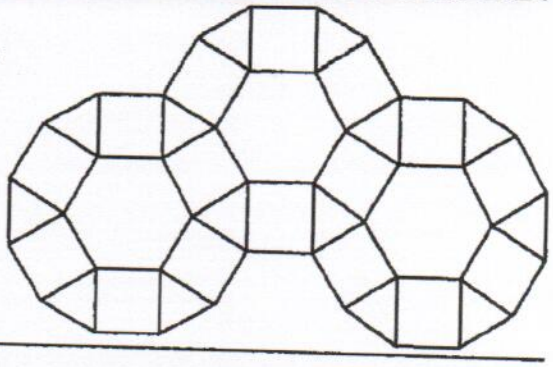
7. A 32-pound box of cantaloupe costs \$24.40. How much would a 12-pound box cost?

8. If a 10-pound turkey costs \$20.42, how much would a 21-pound turkey cost?

What Do You Call It When One Movie Is Just Like Another Movie?

Write the letter of each exercise in the box containing the answer.

1 This pattern of tiles could be extended to completely cover a surface. Find each ratio:



T. Hexagons to squares. $\frac{3}{16}$

E. Triangles to squares. $\frac{7}{8}$

O. Squares to triangles.

I. Hexagons to all tiles.

---

2 Write each ratio in simplest form.

H. $\frac{8 \text{ in.}}{3 \text{ ft}}$ **E.** $\frac{2 \text{ min}}{300 \text{ s}}$ **O.** $\frac{7 \text{ gal}}{10 \text{ qt}}$ **R.** $\frac{8 \text{ m}}{60 \text{ cm}}$ **E.** $\frac{500 \text{ g}}{4 \text{ kg}}$

---

3 The Vultures had 15 wins, 9 losses, and 1 tie. Write each ratio in simplest form.

T. wins to losses **O.** wins to ties **E.** wins to games **U.** losses to games

---

4 The steepness or slope of a ski run can be expressed as a ratio of vertical "rise" to horizontal "run". Find each slope.

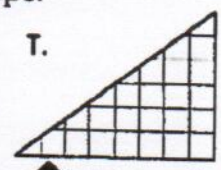
E.

Beginner

S.

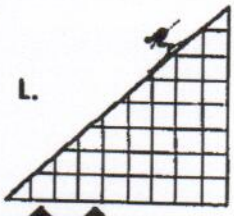
Intermediate

T.



Advanced

L.



Expert

---

5 Find the perimeter and area for each rectangle at the right. Then write each ratio in simplest form.

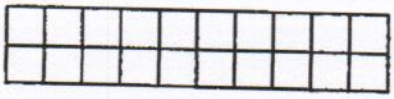
Q. $\frac{\text{perimeter of a}}{\text{perimeter of b}}$

H. $\frac{\text{area of a}}{\text{area of b}}$

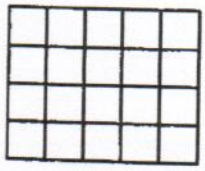
N. $\frac{\text{perimeter of c}}{\text{perimeter of d}}$

S. $\frac{\text{area of a}}{\text{area of c}}$

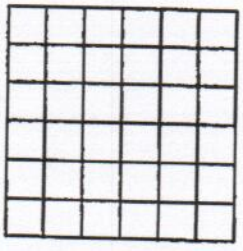
a.



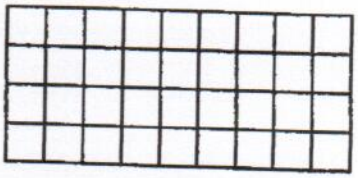
b.



c.



d.



$\frac{15}{1}$	$\frac{12}{13}$	$\frac{2}{5}$	$\frac{4}{7}$	$\frac{1}{11}$	$\frac{5}{11}$	$\frac{7}{5}$	$\frac{5}{9}$	$\frac{1}{8}$	$\frac{4}{3}$	$\frac{9}{25}$	$\frac{7}{8}$	$\frac{8}{9}$	$\frac{7}{11}$	$\frac{5}{3}$	$\frac{14}{5}$	$\frac{5}{4}$	$\frac{3}{16}$	1	$\frac{3}{5}$	$\frac{11}{18}$	$\frac{8}{7}$	$\frac{3}{4}$	$\frac{2}{9}$	$\frac{2}{7}$	$\frac{40}{3}$

Dividing Decimals

Move the decimal points the number of places needed to make the divisor a whole number.

$0.03652 \div .88 =$

$$
\begin{array}{r}
.0415 \\
.88\overline{)\,.036520} \\
\underline{352} \\
132 \\
\underline{88} \\
440 \\
\underline{440} \\
0
\end{array}
$$

1. $0.128 \div 0.8 =$
2. $2.45 \div 3.5 =$
3. $0.5773 \div 5.02 =$
4. $39.78 \div 0.195 =$
5. $4.2016 \div 5.2 =$
6. $1.45 \div 0.08 =$
7. $0.1716 \div 5.2 =$
8. $3.906 \div 1.2 =$
9. $6.56 \div 0.16 =$
10. $0.0135 \div 4.5 =$
11. $0.0483 \div 0.21 =$
12. $0.5418 \div 0.3 =$
13. $16.83 \div 0.11 =$
14. $0.1926 \div 32.1 =$

Mixed Practice with Decimals

1. $12.16 - 8.72 =$
2. $119.7 + 11.97 =$
3. $(3.4)\ (8) =$
4. $2960 \div 0.37 =$
5. $1.21 \div 1.1 =$
6. $7 + 6.91 =$
7. $18.91 - 11.857 =$
8. $(1.35)\ (21.4) =$
9. $21.2 - 9.03 =$
10. $0.7 + 0.02 + 4 =$
11. $(0.25)\ (2.5)\ (25) =$
12. $95.6 - 87.81 + 12.21 =$
13. $(0.8)\ (1.3)\ (0.62) =$
14. $37.92 \div 1.2 =$
15. $0.1007 \div 5.3 =$
16. $329.82 + 6.129 =$
17. $893.631 - 11.09 =$
18. $18.332 + 82.82 =$
19. $132.03 \div 8.1 =$
20. $(16.1)\ (3.66) =$
21. $1093.62 - 10.993 =$
22. $6.963 \div 2.11 =$

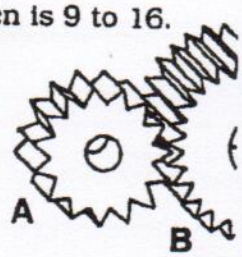
What Did the Detectives Say to the Crook?

Solve each problem and find your solution in the answer column. Note the two letters next to it. Write these letters in the two boxes above the exercise number at the bottom of the page.

1 To make his special salad dressing, Wolfgang combines 7 fl oz of oil with 4 fl oz of vinegar. One day he needed a larger amount, so he used 8 fl oz of oil. How much vinegar did he need? $\frac{\text{oil}}{\text{vin.}}$ $\frac{7}{4} = \frac{8}{v}$ $7 \cdot v = 8 \cdot 4$ $\frac{7v}{7} = \frac{32}{7}$ $v \approx 4.6$

2 The ratio of height to width for a TV screen is 9 to 16. How high is a screen that is 30 in. wide?

3 GEAR RATIO. The ratio of the number of teeth on Gear A to the number of teeth on Gear B is 5 to 12. How many teeth are on Gear B?
(Hint: Count the teeth on Gear A.)



4 Jessica checked her gas mileage and found that she had used 17.4 gal of gas to travel 392 mi. At this rate, how many gallons will she use to travel from Los Angeles to Miami, a distance of 2,735 mi?

5 If there are 95 g of fat in 16 oz of ground beef, how much fat is in 3 oz of ground beef?

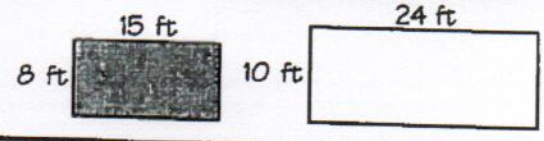
6 A locomotive is 56 ft long and 11 ft wide. A special effects designer makes a model that is 18 in. long. How wide should it be?

7 The Screaming Equals' team color is made by mixing red paint with blue paint in a ratio of 12 to 7. How much blue paint should be mixed with 4 gal of red?

8 A marathon runner ran the first 3 mi in 17.2 min. If she continues running at this pace, how long will it take her to run the entire marathon of 26.2 mi?

9 SOLAR SYSTEM MODEL. The sun has a diameter of 870,000 mi. The Earth has a diameter of 8,000 mi. If a 24-cm-diameter basketball is used as a model sun, what should be the diameter of the model Earth?

10 If it took 1.5 qt of paint to paint the wall on the left, how many quarts will be needed to paint the wall on the right?



answers

S T	153.4 min
W E	36
E S	4.9 in.
E T	2.3 gal
D R	18.3 g
O S	0.7 cm
O L	3 qt
I C	4.6 fl oz
T H	42
O M	121.4 gal
A N	2.5 gal
O U	3.5 in.
G O	5.2 fl oz
A R	150.2 min
T Y	16.9 in.
U N	2.8 qt
E P	17.8 g
E E	0.2 cm
L L	124.5 gal

				I	C				
3	8	5	10	1	7	4	9	2	6

How Do You Make Chicken Napoleon?

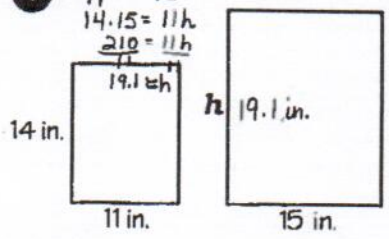
For these pairs of similar figures, find the length of each side marked with a variable. Round to the nearest tenth. Write each variable letter in the box containing the length of that side.

1 $\frac{14}{11} = \frac{h}{15}$

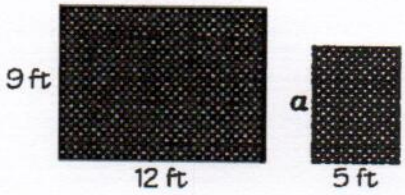
$14 \cdot 15 = 11h$

$\frac{210}{11} = \frac{11h}{11}$

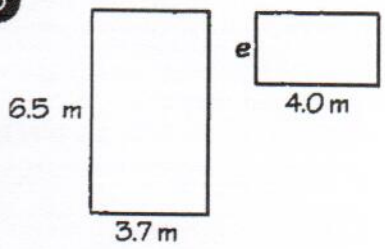
$19.1 \approx h$



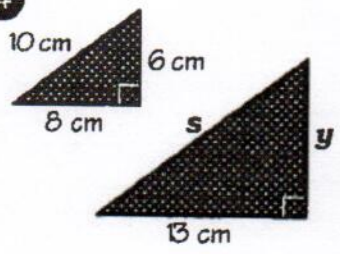
2 Hint: The figure has been rotated.



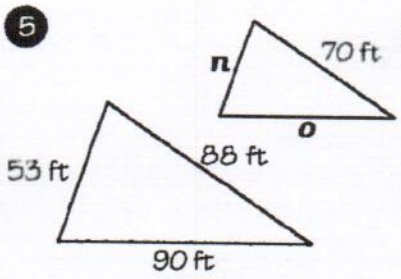
3



4



5



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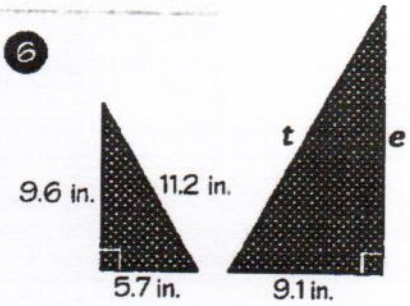

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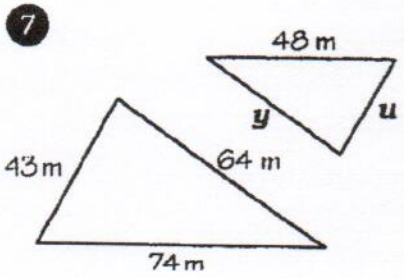

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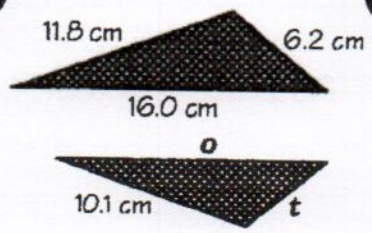
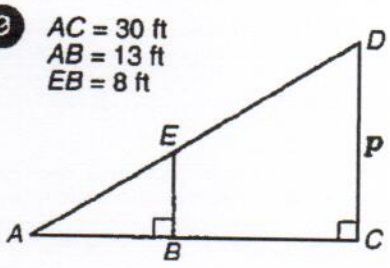
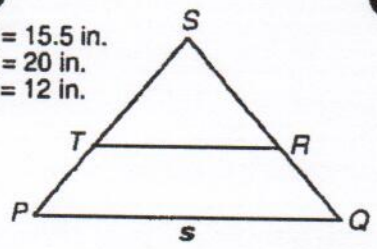


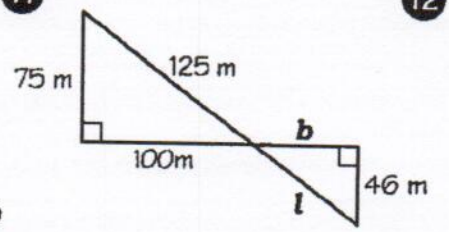
9 $AC = 30$ ft
$AB = 13$ ft
$EB = 8$ ft



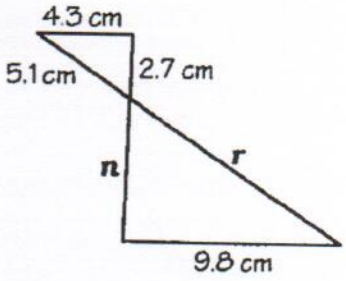
10 $TR = 15.5$ in.
$SP = 20$ in.
$ST = 12$ in.



11



12



27.9 m	25.8 in.	2.3 m	21.3 in.	13.7 cm	42.2 ft	76.7 m	9.8 cm	19.3 ft	5.3 cm	19.1 in. H	15.3 in.
65.7 ft	61.3 m	71.6 ft	6.2 cm	41.5 m	8.8 cm	18.5 ft	6.7 ft	11.6 cm	17.9 in.	16.3 cm	62.7 m

Percents

Fraction to percent	Decimal to percent
$\frac{1}{2} \longrightarrow \frac{1}{2} = \frac{x}{100}$	$0.425 \longrightarrow 0.425 = 42.5\%$
$2x = 100$	When converting a decimal
$x = 50$	to a percent, move the decimal
$\frac{1}{2} = 50\%$	two places to the right.

Write each fraction or decimal as a percent. Round each answer to the nearest hundredth.

1. $\frac{7}{21}$ $21\overline{)7.00}$ .33... 0.33 33%
   $-63\downarrow$
   70
   -63
   7

2. 10.8

3. 12.392

4. 523.32

5. 2.3839

6. $\frac{12}{19}$

7. $\frac{5}{46}$

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

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

10. 2.32

11. 17.45

12. 5.293

Percents

50% of 60 = _____

$\frac{50}{100} = \frac{x}{60}$

$100x = 3000$

$x = 30$

_____% of 40 = 20

$\frac{x}{100} = \frac{20}{40}$

$40x = 2000$

$x = 50$ 50%

40% of _____ = 30

$\frac{40}{100} = \frac{30}{x}$

$40x = 3000$

$x = 75$

Solve each problem.

1. 20% of 15 =

2. 30% of 60 =

3. 15% of 75 =

4. 37% of 65 =

5. 44% of 40 =

6. _____% of 35 = 15

7. _____% of 70 = 20

8. _____% of 48 = 8

9. _____% of 65 = 33

10. _____% of 9 = 4

11. 12% of _____ = 76

12. 65% of _____ = 80

13. 20% of _____ = 75

14. 45% of _____ = 150

15. 22% of _____ = 34

16. 50% of _____ = 52

Problem Solving with Percents

A baseball team played 30 games and won 50% of them. How many games did the team win?

$$50\% \text{ of } 30 = \_\_\_\_\_$$

$$\frac{50}{100} = \frac{x}{30}$$

$$100x = 1500$$

$$x = 15 \text{ games}$$

Solve each problem. Show your work.

1. In a group of 35 students, 7 have yellow socks. What percentage of the students have yellow socks?

2. A test has 60 questions. Fred answers 75% of them correctly. How many problems does Fred answer correctly?

3. A football team plays 25 games. They win 32% of them. How many games does the team win?

4. The regular price of a pair of pants is $38.00. The pants are discounted 35%. How much do the pants cost after the discount is applied?

5. A store was having a sale on books. The book Bart wants is priced at $19.00. He has a coupon for 30% off. How much does the book cost after the coupn is applied?

6. Lisa went to a restaurant and gave the waiter a 15% tip. If the price of her meal was $10.25, how much did Lisa tip the waiter?

7. Emily bought a new car that cost $22,000. The car was 93% of the list price. How much was the list price?

Adding Integers with Unlike Signs

$4 + (^-12) = ^-8$	$^-10 + 14 = 4$
$4 - 12 = ^-8$	$14 - 10 = 4$

Solve each problem.

1. $24 + (^-67) =$

2. $^-6{,}607 + 4{,}362 =$

3. $^-194 + 635 =$

4. $^-23{,}895 + 5{,}863 =$

5. $321 + (^-494) =$

6. $714 + (^-6{,}976) =$

7. $^-43 + 68 =$

8. $131{,}985 + (^-454{,}202) =$

9. $^-343 + 439 =$

10. $^-112{,}956 + 564{,}258 =$

11. $^-595 + 630 =$

12. $67{,}888 + (^-78{,}952) =$

13. $55{,}980 + (^-42{,}278) =$

14. $^-64{,}412 + 73{,}651 =$

15. $^-99 + 94 =$

16. $88 + (^-34) =$

17. $^-84{,}154 + 89{,}343 =$

18. $34{,}139 + (^-56{,}913) =$

19. $^-73 + 25 =$

20. $850 + (^-828) =$

Subtracting Integers

$6 - 10 = 6 + (^-10) = ^-4$ (Add the opposite)

$6 - (^-10) = 6 + 10 = 16$ (Add the opposite)

Solve each problem.

1. $^-8 - 3 =$

2. $56 - (^-65) =$

3. $^-52 - (^-34) =$

4. $^-19 - (^-13) =$

5. $42 - 23 =$

6. $77 - 22 =$

7. $17 - 26 =$

8. $^-594 - (^-73) =$

9. $^-117 - 29 =$

10. $^-749 - 629 =$

11. $19 - (^-342) =$

12. $2{,}567 - (^-492) =$

13. $5{,}762 - 2{,}144 =$

14. $121 - 154 =$

15. $^-8 - (^-27) =$

16. $^-87 - 129 =$

17. $45 - 75 =$

18. $688 - 456 =$

19. $187 - (^-48) =$

20. $157 - (^-452) =$

Mixed Practice with Integers

Solve each problem.

1. $(625 \div 5) \times 0.2 =$

2. $\frac{150}{(-5)} \times (-4) =$

3. $80 - (-22) =$

4. $\frac{-555}{(-5)} \times (-6) =$

5. $-3 \times 5 =$

6. $\frac{-424}{4} =$

7. $19 - 23 =$

8. $(\frac{-72}{9}) + (\frac{-64}{8}) + (\frac{44}{-11}) =$

9. $83 + (-85) =$

10. $(-34) + (-255) =$

11. $28 - (-65) =$

12. $28 - (-26) =$

13. $[-19 - (-21) - (-34)] \div (-6) =$

14. $[-18 - (-66) -22] \times 2 =$

15. $-61 - (-21) =$

16. $(16 - 21 + 34) \div (-8) =$

17. $-35 + 62 + (-80) =$

18. $[10 + (-31) + (-80)] \div 3 =$

19. $(-13 - 54 - 30) \times 2 =$

20. $[-160 + (-75) + 24] \times 4 =$

21. $56 \times 3 \times 21 =$

22. $(-12 + 13 + 55) \div 3 =$

Algebra: Solving Equations

Solve each equation. Check your solution.

1. $x - 16 = -38$

$+16 \quad +16$

$x = -22$

2. $2w = -64$

3. $-9s = -63$

4. $y - (-12) = 16$

5. $-15 + a = -32$

6. $q + (-63) = -100$

7. $\frac{k}{5} = 18$

8. $\frac{m}{-6} = -9$

9. $x - 240 = 78$

10. $-17 = \frac{n}{4} - 13$

$+13 \quad +13$

$4 \cdot -4 = \frac{n}{4} \cdot 4$

$-16 = n$

11. $25 = \frac{p}{-6} + (-19)$

12. $-6y = -960$

13. $18w = -234$

14. $2{,}294 = -74t$

15. $49 = -9y - 68$

16. $375 = 14x + (-17)$

$+17 \quad +17$

$\frac{392}{14} = \frac{14x}{14}$

$28 = x$

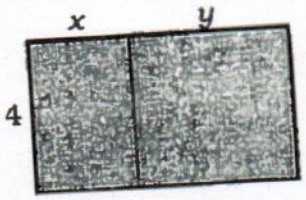
17. $-12y - 14 = 142$

18. $15x + 36 = -249$

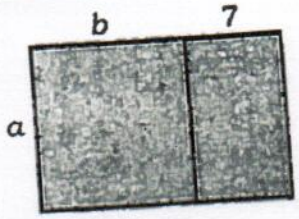
What Is the World's Longest Punctuation Mark?

For each exercise, write the letter of the answer in the box containing the exercise number.

In Exercises 1-2, circle the expression that does *not* represent the area of the outside (largest) rectangle. Write its letter in the corresponding numbered box.

1. 

S. $4(x + y)$
K. $4x + 4y$
T. $4 + xy$

2. 

H. $ab + 7$
R. $a(b + 7)$
A. $ab + 7a$

In Exercises 3-22, use the distributive property to complete each statement.

3. $9(a + b) = 9a + \underline{9b}$
4. $3(n + 7) = \_\_\_\_ + 21$
5. $2(15 + q) = \_\_\_\_ + 2q$
6. $a(b + 8) = ab + \_\_\_\_$
7. $x(x + 5) = \_\_\_\_ + 5x$
8. $16(y + 3) = 16y + \_\_\_\_$
9. $e(s + t) = es + \_\_\_\_$
10. $7(p + q + 4) = 7p + 7q + \_\_\_\_$
11. $a(b + c + 11) = \_\_\_\_ + ac + 11a$
12. $k(8 + 3 + k) = 8k + 3k + \_\_\_\_$
13. $7x + 7y = 7(x + \underline{y})$
14. $3m + 3n = 3(\_\_\_\_ + n)$
15. $8a + 8b = \_\_\_\_(a + b)$
16. $ax + ay = \_\_\_\_(x + y)$
17. $nt + 4n = n(t + \_\_\_\_)$
18. $2d + 12 = 2(\_\_\_\_ + 6)$
19. $5e + 35 = 5(e + \_\_\_\_)$
20. $x^2 + 9x = x(\_\_\_\_ + 9)$
21. $4p + 4q + 80 = 4(p + q + \_\_\_\_)$
22. $kw + wy + w^2 = w(k + y + \_\_\_\_)$

Answers for 3-12:

U. 48	O. $3n$	N. 30
E. $9b$	D. 28	E. k^2
T. $5c$	H. x^2	N. et
E. $8a$	R. ab	S. $3k$

Answers for 13-22:

H. w	D. y	B. k
M. m	R. d	T. a
L. 15	E. 8	D. 7
E. 4	S. 20	A. x

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
		E										D									

Adding and Subtracting Real Numbers

$$-4 + (-3) + 2\frac{1}{3} = -7 + 2\frac{1}{3} = -6\frac{3}{3} + 2\frac{1}{3} = -4\frac{2}{3}$$

Solve each problem.

1. $-3 + (-3\frac{1}{4}) - (-3\frac{3}{8}) =$

2. $-5\frac{2}{3} - (-6\frac{1}{5}) + 1\frac{7}{12} =$

3. $-2 + 6\frac{1}{5} + (-4\frac{1}{3}) =$

4. $-6 - 2\frac{3}{5} + (-7\frac{2}{5}) =$

5. $17.65 + (-5\frac{1}{10}) + 13\frac{2}{5} =$

6. $7\frac{1}{7} - (-9.33) + 7\frac{4}{7} =$

7. $5\frac{5}{12} + (-6.44) - 14.69 =$

8. $7\frac{4}{13} + (-9.21) - 16.32 =$

9. $-1 + (-2\frac{1}{3}) + (-7\frac{3}{5}) =$

10. $13.23 - (-31.73) =$

11. $2\frac{5}{7} - (-5\frac{6}{9}) + \frac{1}{3} =$

12. $5\frac{5}{8} - (-7\frac{2}{3}) - \frac{1}{9} =$

13. $4.38 + (-4.38) =$

14. $7 + 13.3 + (-9\frac{1}{6}) =$

15. $4\frac{1}{5} + (-4.34) - 7\frac{1}{4} =$

16. $17 - 12.2 + (-9\frac{2}{5}) =$

17. $12.26 - (-7\frac{2}{5}) + 18\frac{1}{4} =$

18. $-3\frac{2}{3} + (-5\frac{5}{12}) =$

Multiplying and Dividing Real Numbers

$$2 \times 3 \times \frac{1}{2} = 6 \times \frac{1}{2} = \frac{6}{1} \times \frac{1}{2} = 3$$

$$2\frac{1}{2} \times 1\frac{3}{4} \div 1\frac{1}{2} = \frac{5}{2} \times \frac{7}{4} \div \frac{3}{2} = \frac{5}{2} \times \frac{7}{4} \times \frac{2}{3} = \frac{35}{12} = 2\frac{11}{12}$$

Solve each problem.

1. $2\frac{1}{3} \div 1\frac{1}{2} \times \frac{5}{6} =$

2. $2\frac{1}{7} \div (-5.56) =$

3. $-3 \times 2\frac{1}{5} \times (-7\frac{1}{3}) =$

4. $7 \div 2.5 \times (-3\frac{2}{5}) =$

5. $-8\frac{2}{3} \times 3\frac{7}{15} =$

6. $5\frac{1}{3} \times 9.80 \times 0 =$

7. $1\frac{5}{12} \times 3.29 =$

8. $11 \times 3\frac{1}{12} \times (-3) =$

9. $7 \times (-2\frac{1}{3}) \times 2 =$

10. $(-3\frac{1}{4})(-3\frac{1}{4}) \div 2 =$

11. $5\frac{1}{2} \div (-3\frac{1}{6}) =$

12. $2\frac{2}{3} \times (-6\frac{1}{5}) =$

13. $-6.3 \times 2 \times \frac{1}{2} =$

14. $10 \div 12.1 \div (-6\frac{1}{6}) =$

15. $9.21 \times (-7\frac{1}{3}) \div 25\frac{5}{9} =$

16. $6.21 \times (-1.37) =$

17. $10.6 \div (-2\frac{1}{2}) \times 3\frac{1}{4} =$

18. $3.6 \times (-31.72) =$

Order of Operations with Real Numbers

$$-4 \times 2 + 2 = -8 + 2 = -6$$

$$2\frac{1}{4} \div (4 + 8) = \frac{9}{8} \div 12 = \frac{9}{8} \times \frac{1}{12} = \frac{9}{96} \text{ or } \frac{3}{32}$$

Solve each problem. Use the order of operations rules.

1. $2 \times 3\,[7 + (6 \div 2)] =$

2. $\frac{2}{3}(-15 - 4) =$

3. $-8 \div (-2) + 5 \times (\frac{-1}{2}) - 25 \div 5 =$

4. $-30 \div 6 + 4\frac{1}{5} =$

5. $(9\frac{1}{3} + 4\frac{1}{3}) \div 6 - (-12) =$

6. $\frac{[(60 \div 4) + 35]}{(-12 + 35)} =$

7. $\frac{3}{4}[(-15 + 4) + (6 + 7) \div (-3)] =$

8. $3[-3(2 - 8) - 6] =$

Evaluating Expressions

If $w = \frac{1}{5}$, $x = 4$, and $y = -5$,

then $3x(5w + 2y) = 3 \cdot 4[5(\frac{1}{5}) + 2(-5)] = 12(1 - 10) = 12(-9) = -108$

Evaluate each expression if $w = \frac{1}{5}$, $x = 4$, and $y = -5$.

1. $y(w + 7) =$

2. $3w + 4(x - y) =$

3. $6[w + (-y)] =$

4. $wx + x + 6xy =$

5. $5(w - 2y) =$

6. $w(x + y) =$

7. $w(xw + xy) =$

8. $7w - (xy + 3) =$

9. $3w(3y + 5x) =$

10. $wx(3w + 3y - 6) =$

11. $3w - 4x =$

12. $10y(4y + 2w) =$

13. $8x + (-12x) =$

14. $4w - 7x + 3y - 2w =$