

Gr 7

Advanced
Math

Summer Work

Mrs. Mitchell

Name _____ Date _____

Variables and Equations

Solving One-Step Equations (Addition and Subtraction)

$$\begin{aligned} 12 + x &= -24 \\ 12 + (-12) + x &= -24 + (-12) \\ x &= -36 \end{aligned}$$

Solve each equation for the given variable.

1. $-13 + b = 31$

2. $n + \frac{3}{8} = \frac{5}{8}$

3. $x - 17 = -27$

4. $27 = v + (-5)$

5. $-4 = x - 3$

6. $c - 3 = 4.7$

7. $a + 5.7 = 18.9$

8. $12 - (-u) = 17$

9. $-200 = b + (-73)$

10. $-13 + x = 18$

11. $-t + (-7) = -56$

12. $3 + x = 9$

13. $z + 3.5 = 4.7$

14. $12 + (-g) = 10$

15. $y - 12 = 15$

16. $2\frac{1}{3} + r = 4\frac{2}{9}$

17. $x + 2 = 2(3 - 4)$

18. $s - 5 = 6 + (-8)$

19. $-13 = n + (-39)$

20. $r = 4.4 + 3.9$

Variables and Equations**Solving One-Step Equations (Multiplication and Division)**

$$\begin{aligned} 3x &= 15 \\ \frac{3x}{3} &= \frac{15}{3} \\ x &= 5 \end{aligned}$$

$$\begin{aligned} -\frac{3}{4y} &= -6 \\ -\frac{4}{3} \cdot -\frac{3}{4y} &= -6 \cdot \frac{4}{3} \\ y &= 8 \end{aligned}$$

Solve each equation for the given variable.

1. $12.8 = 4b$

2. $4b = -36$

3. $-13h = 169$

4. $-\frac{3}{4} = \frac{n}{16}$

5. $10x = -100$

6. $4c = 288$

7. $7x = -63$

8. $4y = -48$

9. $6x = -36$

10. $\frac{8}{k} = \frac{2}{5}$

11. $-(-90) = -45z$

12. $-\frac{x}{8} = \frac{1}{4}$

13. $-50 = 2x$

14. $\frac{2}{n} = \frac{1}{9}$

15. $\frac{4}{x} = \frac{2}{9}$

16. $\frac{x}{6} = \frac{6}{9}$

17. $-35c = 700$

18. $-4x = -20$

19. $-\frac{x}{6} = \frac{2}{3}$

20. $1.6c = 80$

Decimals**Subtracting Decimals**

$$\begin{array}{r} 13.2 - 4.10 = 13.20 \\ - 5.10 \\ \hline 8.10 \end{array}$$

Solve each problem.

1. $4.239 - 0.06 =$

2. $51.23 - 14.45 =$

3. $16.3 - 12.4 =$

4. $452.82 - 127.36 =$

5. $62.1 - 33.29 =$

6. $75.034 - 22.439 =$

7. $76.34 - 47.30 =$

8. $34.32 - 12.43 =$

9. $435.34 - 345.34 =$

10. $756.98 - 32.43 =$

11. $513.43 - 305.342 =$

12. $65.9 - 33.2 =$

13. $21.73 - 16.43 =$

14. $121.32 - 19.34 =$

15. $23.28 - 0.552 - 1.2 =$

16. $8.64 - 0.476 =$

17. $13.2 - 6.7 =$

18. $21.32 - 4.28 =$

19. $35.63 - 0.021 =$

20. $485.02 - 332.86 =$

Decimals**Subtracting Decimals**

$$\begin{array}{r} 10.5 - 3.21 = 10.50 \\ - 3.21 \\ \hline 7.29 \end{array}$$

Solve each problem.

1. $43,289.56 - 28,125.87 =$

2. $756.84 - 31.343 =$

3. $34.34 - 23.19 =$

4. $4.7 - 2.3 =$

5. $95.87 - 52.45 =$

6. $72.72 - 43.562 =$

7. $85.76 - 34.65 =$

8. $7.435 - 0.0345 =$

9. $345.24 - 159.24 =$

10. $54.68 - 23.76 =$

11. $74.71 - 61.92 =$

12. $84.8 - 44.87 =$

13. $857.44 - 22.39 =$

14. $93.76 - 8.67 =$

15. $233.23 - 6.45 =$

16. $6.56 - 0.654 =$

17. $43.5 - 0.015 - 3.2 =$

18. $39.43 - 15.34 =$

19. $56.4 - 0.043 =$

20. $954.34 - 657.56 =$

Decimals**Multiplying Decimals**

$$\begin{array}{r} \underbrace{(0.3)(0.12)} \\ 3 \text{ decimal places} \end{array} \longrightarrow \begin{array}{r} 0.3 \\ \times 0.12 \\ \hline 0.036 \end{array}$$

Solve each problem. Show your work.

1. $(0.6)(0.022) =$

2. $(0.012)(0.7) =$

3. $(3.2)(0.65) =$

4. $0.07 \times 0.4 =$

5. $(0.02)(1.2) =$

6. $0.03 \times 0.7 =$

7. $(0.5)(0.2) =$

8. $(2.2)(0.22) =$

9. $(0.12)(0.04) =$

10. $0.06 \times 0.07 =$

11. $(0.11)(0.07) =$

12. $(0.13)(0.02) =$

13. $(0.7)(0.07) =$

14. $(0.5)(0.05) =$

15. $0.5 \times 0.06 =$

16. $(0.012)(1.2) =$

17. $(0.8)(0.005) =$

18. $0.25 \times 0.07 =$

19. $(0.9)(0.002) =$

20. $(0.9)(0.9) =$

Decimals**Multiplying Decimals Using a Calculator**

Solve each problem. Use a calculator.

1. $(12.3)(5.81)(0.06) =$

2. $(0.042)(0.006) =$

3. $(0.34)(0.12)(0.104) =$

4. $(8.9)(0.11)(3.09) =$

5. $(15.92)(0.4)(0.32) =$

6. $(0.004)(6) =$

7. $(6.4)(0.3) =$

8. $(0.4)(0.232) =$

9. $(5.12)(6) =$

10. $(10.89)(0.221) =$

11. $(3.28)(12.8) =$

12. $(0.004)(0.0004)(0.04) =$

13. $(0.016)(3.8) =$

14. $(0.007)(0.6)(0.05) =$

15. $(3.806)(10.01) =$

16. $(340)(0.02) =$

17. $(0.8)(0.342)(0.02) =$

18. $(2.09)(0.005) =$

19. $(0.05)(0.15)(0.002) =$

20. $(5.4)(0.645)(0.07) =$

21. $(0.7)(0.8) =$

22. $(9)(0.03)(0.2) =$

Fractions**Dividing Fractions**

$$\begin{array}{c}
 \begin{array}{c} \downarrow \text{rewrite} \downarrow \\ 1\frac{1}{8} \div 2\frac{1}{6} = \frac{9}{8} \div \frac{13}{6} = \frac{5}{2} \times \frac{6}{13} = \frac{27}{52} \\ \uparrow \text{rewrite} \uparrow \end{array}
 \end{array}
 \quad \text{invert and multiply}$$

Solve each problem. Write the answer in simplest form.

1. $9\frac{1}{6} \div 3\frac{5}{12} =$

2. $9\frac{1}{6} \div 3\frac{8}{12} =$

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

4. $5\frac{1}{2} \div 8\frac{4}{5} =$

5. $5\frac{4}{5} \div 1\frac{8}{15} =$

6. $9\frac{1}{5} \div 2\frac{3}{10} =$

7. $7\frac{4}{5} \div 1\frac{3}{10} =$

8. $7\frac{1}{9} \div 2\frac{2}{3} =$

9. $8\frac{4}{5} \div 1\frac{1}{15} =$

10. $8\frac{2}{5} \div 2\frac{1}{10} =$

11. $5\frac{3}{5} \div 1\frac{6}{10} =$

12. $6\frac{1}{3} \div 2\frac{1}{6} =$

13. $11\frac{3}{4} \div 5\frac{1}{2} =$

14. $8\frac{3}{5} \div 2\frac{7}{10} =$

15. $3\frac{5}{7} \div 3\frac{13}{14} =$

16. $3\frac{3}{4} \div 3\frac{1}{8} =$

17. $9\frac{3}{7} \div 5\frac{10}{14} =$

18. $5\frac{1}{6} \div 2\frac{1}{12} =$

Fractions**Dividing Fractions**

$$\begin{array}{c} \downarrow \text{rewrite} \downarrow \qquad \text{invert and multiply} \\ 1\frac{2}{3} \div 2\frac{1}{5} = \frac{5}{3} \div \frac{11}{5} = \frac{5}{3} \times \frac{5}{11} = \frac{25}{33} \\ \uparrow \text{rewrite} \uparrow \end{array}$$

Solve each problem. Write the answer in simplest form.

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

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

Percents

$$80\%$$

$$80\% = \frac{80}{100} = \frac{8}{10} = \frac{4}{5}$$

$$51.5\%$$

$$51.5\% = \frac{51.5}{100} = \frac{515}{1000} = \frac{21}{40}$$

Write each percent as a fraction and each fraction as a percent.

1. $4\frac{5}{46}$

9. 23.7%

2. 8.6%

10. 21.98%

3. 4.934%

11. $7\frac{4}{23}$

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

12. $3\frac{56}{77}$

5. .98%

13. 2.98%

6. 564.89%

14. $21\frac{7}{32}$

7. 12.4%

15. $6\frac{1}{2}$

8. 5.75%

16. $2\frac{5}{7}$

Percents

Fraction to percent

$$\frac{1}{2} \Rightarrow \frac{1}{2} = \frac{x}{100}$$

$$100 = 2x$$

$$50 = x$$

$$\frac{1}{2} = 50\%$$

Decimal to percent

$$.535 \Rightarrow .535 = 53.5\%$$

When converting a decimal to a percent, move the decimal 2 places to the right.

Write each expression as a percent.
Round answers to the nearest hundredth.

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

7. 11.6

2. 2.392

8. 412.32

3. 2.3838

9. $\frac{12}{17}$

4. $\frac{7}{15}$

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

5. 3.293

11. 4.34

6. 17.3839

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

Decimals

Writing Decimals as Fractions

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

1. 0.345

2. 0.12

3. 0.555

4. 0.300

5. 0.942

6. 0.24

7. $0.34\overline{58}$

8. 0.28

9. $0.13\overline{4}$

10. 0.59

11. 0.34

12. 0.342

13. 0.708

14. 0.144

15. 0.65

16. 0.920

17. $0.33\overline{4}$

18. 0.438

19. 0.378

20. 0.82

21. 0.2052

22. $0.6\overline{22}$

Ratios, Proportions, and Percents**Ratios**

$$\begin{array}{l} 3 \text{ to } 12 \longrightarrow \frac{3}{12} = \frac{1}{4} \\ 25:30 \longrightarrow \frac{25}{30} = \frac{5}{6} \\ 5 \text{ out of } 15 \longrightarrow \frac{5}{15} = \frac{1}{3} \end{array}$$

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

1. 66 to 40

2. 130 to 112

3. 110:112

4. 65:35

5. 21 to 84

6. 66:166

7. 30 to 323

8. 197 to 17

9. 18 to 76

10. 19 to 27

11. 0.12:1.44

12. 167 to 132

13. 50 to 90

14. 175 to 200

15. 65:115

16. 113:226

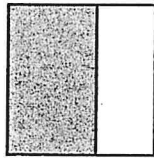
Name _____

**Practice
10-9**

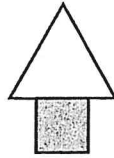
Estimating Percents

Estimate what percent of each figure is shaded.

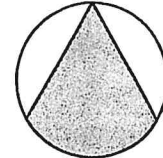
1. _____



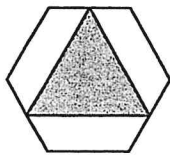
2. _____



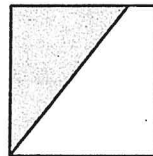
3. _____



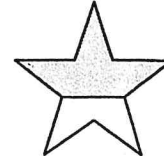
4. _____



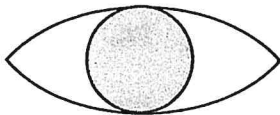
5. _____



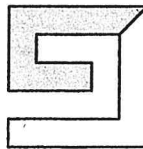
6. _____



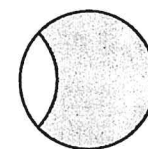
7. _____



8. _____



9. _____



Estimate the percent.

10. 13 out of 66 _____ 11. 31 out of 118 _____ 12. 18 out of 21 _____

13. 73 out of 80 _____ 14. 47 out of 77 _____ 15. 93 out of 190 _____

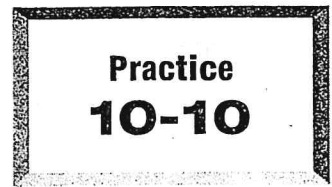
16. $\frac{312}{420}$ _____ 17. $\frac{59}{84}$ _____ 18. $\frac{25}{240}$ _____ 19. $\frac{45}{148}$ _____

20. $\frac{59}{74}$ _____ 21. $\frac{88}{116}$ _____ 22. $\frac{41}{47}$ _____ 23. $\frac{61}{99}$ _____

24. In 1989, the EarthGrains Bakery in Fort Payne, Alabama, set a world record by baking a cake weighing 128,000 lb. The cake included 16,000 lb of icing. About what percent of the cake was icing?

25. Patents are issued to inventors to prevent others from stealing their ideas. In 1965, 37,000 out of 63,000 patents were issued to U.S. corporations. About what percent is this?

Name _____



Converting Percents to Fractions and Decimals

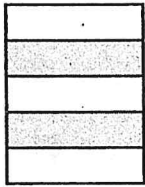
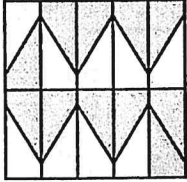
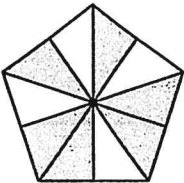
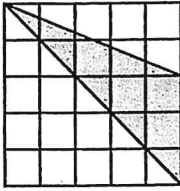
Convert to a fraction in lowest terms.

1. 80% _____ 2. 25% _____ 3. 78% _____ 4. 98% _____
 5. 32% _____ 6. 30% _____ 7. 45% _____ 8. 118% _____
 9. 65% _____ 10. 185% _____ 11. 63% _____ 12. 28% _____
 13. 275% _____ 14. 84% _____ 15. 104% _____ 16. 18% _____

Convert to a percent.

17. $\frac{7}{10}$ _____ 18. $\frac{37}{50}$ _____ 19. $\frac{1}{2}$ _____ 20. $\frac{18}{25}$ _____
 21. 0.41 _____ 22. 0.03 _____ 23. 0.74 _____ 24. 0.92 _____
 25. $\frac{123}{300}$ _____ 26. $\frac{15}{20}$ _____ 27. $\frac{31}{20}$ _____ 28. $\frac{1}{10}$ _____
 29. 0.67 _____ 30. 4.10 _____ 31. 0.8 _____ 32. 0.137 _____

Give the shaded part of each figure as a percent, fraction, and decimal.

33.  percent: _____
 fraction: _____
 decimal: _____
34.  percent: _____
 fraction: _____
 decimal: _____
35.  percent: _____
 fraction: _____
 decimal: _____
36.  percent: _____
 fraction: _____
 decimal: _____

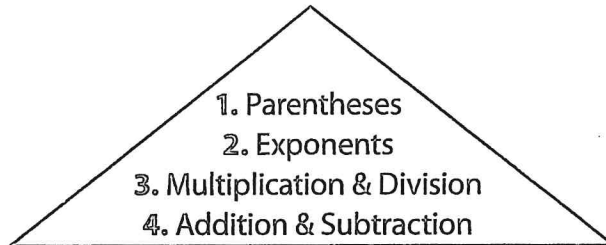
37. In 1993, about $\frac{1}{50}$ of American children lived with relatives other than their parents. Convert this value to a percent. _____
38. In 1950, $\frac{2}{25}$ of the American population was at least 65 years old. What percent is this? _____

Name _____ Date _____

Operations with Real Numbers

Order of Operations

When solving an equation, be sure to follow the order of operations.



$$28 \div (6 - 4) + 2^2 = 28 \div (6 - 4) + 4 = 28 \div 2 + 4 = 14 + 4 = 18$$

Solve.

1. $3 \times 15 \div 5 =$

2. $35 \div 5 - 9 =$

3. $3 + 2 \times 4 =$

4. $5 \times 2 \times 8 =$

5. $6 - 40 \div 8 =$

6. $5(6 + 2) =$

7. $12 - 30 \div 6 =$

8. $32 \div 4 \times 3 =$

9. $5^2 + 3^2 =$

10. $8 + 3 \times 2 =$

11. $4 + 12 \div 2 =$

12. $9 + 20 \div 5 =$

13. $15 - 75 \div 5 =$

14. $9 - 3 + 6 =$

15. $2 \times 8 \div 4 =$

16. $3 + 3 - 2 =$

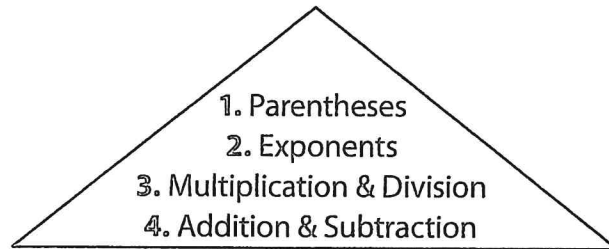
17. $14 - 54 \div 6 =$

18. $9 \div 3 \times 8 =$

Operations with Real Numbers

Order of Operations

When solving an equation, be sure to follow the order of operations.



$$(3^3 + 6 \times 5) - 2 = 9 + (6 \times 5) - 2 = 9 + 30 - 2 = 37$$

Solve.

1. $(3^2 + 2 \times 3) \div 5 =$

2. $5^2 - 4^2 + 2 =$

3. $(4 + 2)^2 =$

4. $(11 - 8)^3 =$

5. $2(7 + 2) =$

6. $(9 - 7)^3 - (4 + 3) =$

7. $(14 - 6)2 =$

8. $4 + 3(12 - 9) =$

9. $5^2 - 2^3 =$

10. $3 \times 8 - (3 \times 2 + 7) =$

11. $(5^2 - 3 \times 5) \div 2 =$

12. $7 + 2^2(5 + 2) =$

13. $3 + 7^2 =$

14. $(2^2 + 3)^2 - 4 =$

15. $6 + 7 \times 3 - 9 \times 2 =$

16. $(2 \times 3) + (21 \div 7) =$

17. $7^2 - 2(3 \times 3 + 5) =$

18. $3 + (6 \times 2) =$



Finding Percent*

Name _____

Date _____

Find the percent. Round to the nearest tenth, if necessary.

1. What percent of 8 is 2? _____
2. What percent of 9 is 3? _____
3. What percent of 25 is 5? _____
4. 8 is what percent of 40? _____
5. 12 is what percent of 50? _____
6. What percent of 16 is 48? _____
7. What percent of 120 is 80? _____
8. What percent of 9 is 72? _____
9. 11 is what percent of 99? _____
10. What percent of 48 is 36? _____
11. What percent of 14 is 49? _____
12. 54 is what percent of 90? _____
13. What percent of 24 is 2? _____
14. What percent of 500 is 600? _____
15. 81 is what percent of 36? _____
16. What percent of 963 is 642? _____
17. What percent of 455 is 182? _____
18. What percent of 224 is 140? _____

Solve.

19. A team won 18 games and lost 9 games. The number of games won is what percent of the total games played?

20. Bob earned \$810 last summer. He spent \$540. What percent of his earnings did he save?

Finding a Part or a Percentage*

Name _____

Date _____

Find the part or percentage of each number.

1. 10% of 40 = _____
2. 75% of 16 = _____
3. 50% of 42 = _____
4. 30% of 90 = _____
5. 5% of 70 = _____
6. 20% of 100 = _____
7. 80% of 10 = _____
8. 2% of 14 = _____
9. 35% of 76 = _____
10. 24% of 28 = _____
11. 1% of 34 = _____
12. 60% of 240 = _____
13. $12\frac{1}{2}\%$ of 56 = _____
14. $33\frac{1}{3}\%$ of 46 = _____
15. $16\frac{2}{3}\%$ of 246 = _____
16. 25% of 316 = _____
17. $87\frac{1}{2}\%$ of 31 = _____
18. $66\frac{2}{3}\%$ of 546 = _____
19. $3\frac{1}{4}\%$ of 620 = _____
20. 400% of 85 = _____
21. 0.75% of 30 = _____

Solve.

22. In order to determine the need for traffic signals at a suburban intersection, a 45-hour watch was kept. During that time, $12\frac{1}{2}\%$ of the 8424 cars recorded made left-hand turns. How many cars was this?

23. During the same watch, it was noted that $16\frac{2}{3}\%$ of the cars made right-hand turns. How many cars made right-hand turns?

24. Last summer, Julie earned \$145. This summer, she earned 25% more. How much did she earn this summer?

25. 30% of 50 students play a musical instrument. How many students play musical instruments?

7-11 Discount and Markup

Name _____ Date _____

A pair of \$45 sneakers is on sale at a discount rate of 30%. What is the sale price of the sneakers?

To find the *amount of discount*:
Write and Solve an Equation.

$$\begin{aligned} \text{discount } (D) &= \text{discount rate} \cdot \text{list price} \\ D &= 30\% \cdot \$45 \\ D &= 0.3 \cdot \$45 \\ D &= \$13.50 \end{aligned}$$

To calculate the *sale price*:

list price	-	amount of discount	=	sale price
↓		↓		↓
\$45	-	\$13.50	=	\$31.50

So the sale price of the sneakers is \$31.50.

A board game is bought for \$21.50. The retailer sells the game for \$26.88. What is the markup rate for the board game?

To find the amount of markup:
Use the Markup Formula.

$$\begin{aligned} \text{markup rate } (R) &= \frac{\text{amount of markup}}{\text{wholesale price}} \\ R &= \frac{26.88 - 21.50}{21.50} \\ &= \frac{5.38}{21.50} \\ &= 0.25023\dots \\ &\approx 0.25 \rightarrow 25\% \end{aligned}$$

So the markup rate is about 25%.

Remember: You can also use a proportion to solve discount problems.

$$\frac{\text{discount } (D)}{\text{list price } (LP)} = \frac{\text{discount rate } (\%)}{100}$$

Find the amount of discount and the sale price to the nearest cent.

1. List price: \$28; Discount rate: 25%
 $D = 25\% \cdot \$28$; $D = 0.25 \cdot \$28 = \7
 sale price: $\$28 - \$7 = \$21$
 The discount is \$7; sale price is \$21.
-

2. List price: \$20; Discount rate: 12%
-

3. List price: \$6.40; Discount rate: 15%
-

4. List price: \$4.50; Discount rate: 24%
-

Find the discount rate. (*Hint:* Percents can be written as mixed numbers or approximate decimals.)

5. List price: \$600; Sale price: \$480
 $R = \frac{600 - 480}{600}$; $R = \frac{120}{600}$
 $R = 0.2 = 20\%$
 The discount rate is 20%.
-

6. List price: \$528; Sale price: \$462
-

7. List price: \$3.99; Sale price: \$2.80
-

8. List price: \$41.93; Sale price: \$35.94
-



Find the markup rate. If necessary, round to the nearest tenth of a percent.

9. Wholesale price: \$20; List price: \$28

$$R = \frac{28 - 20}{20} = \frac{8}{20}; R = 0.4 = 40\%$$

The markup rate is 40%.

10. Wholesale price: \$60; List price: \$75

11. Wholesale price: \$29.40; List price: \$31.50

12. Wholesale price: \$62.55; List price: \$76.45

Solve. Show your work.

13. A beach pass costs \$150 for the season. The town offers a $33\frac{1}{3}\%$ discount on passes purchased before June 1. What will a beach pass cost if purchased before June 1?

14. Jessica bought a tote bag that usually sells for \$14.95 at a 5% discount. How much money did she save buying the tote bag?

15. A binder normally costs \$8.99. Use this information to answer the questions below.

a. A store marks the binder down by 30%. A week later the price is reduced by another 20%. What is the sale price of the binder after the second reduction?

b. Would the price of the binder after the two markdowns be the same if the store had reduced the original price one time by 50%? Explain your answer.

CRITICAL THINKING

16. You can use the following formula to find the discount or markup rate for each pair of prices in the chart below:

$$\text{percent of change} = \frac{\text{new amount} - \text{original amount}}{\text{original amount}}$$

Original Price	\$40	\$6	\$230	\$22.50
New Price	\$50	\$5.10	\$161	\$13.50
Percent of Change	a. _____	b. _____	c. _____	d. _____

What does a negative percent of change represent?

What does a positive percent of change represent?

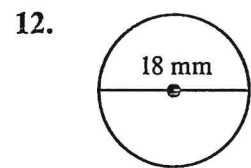
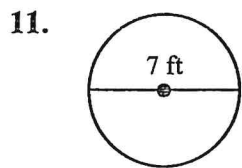
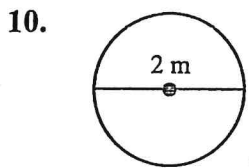
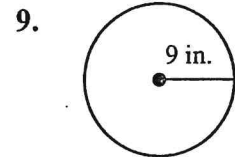
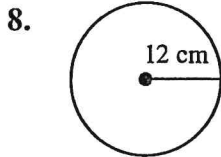
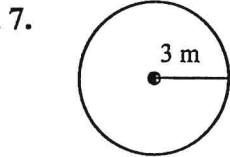
Name _____ Date _____

Exploring Circumference of a Circle

Find the circumference. Use $\frac{22}{7}$ for π .

1. diameter = 14 in. _____
2. diameter = 42 in. _____
3. diameter = 28 in. _____
4. radius = 14 in. _____
5. radius = 7 cm _____
6. radius = 21 ft _____

Find each circumference. Use 3.14 for π . Round your answer to the nearest tenth.
You may want to use a calculator.



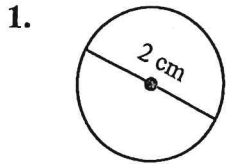
13. diameter = 4 cm _____
14. diameter = 9 in. _____
15. radius = 15 m _____
16. radius is 9 cm _____
17. radius is 18 ft _____
18. radius is 20 mm _____

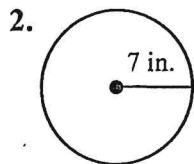
CALCULATOR

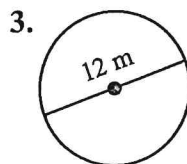
19. How could you find the circumference of many different circles with a calculator without punching in 3.14 for every problem?

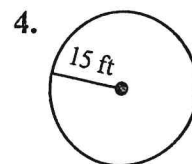
Circumference of Circles

Find each circumference. Use 3.14 for π .









Find each circumference to the nearest whole number.

5. $d = 9$ m _____

6. $d = 2.1$ cm _____

7. $r = 6.1$ cm _____

8. $r = 7.3$ mm _____

9. $d = 56$ m _____

10. $d = 63$ m _____

11. $r = 2.8$ cm _____

12. $r = 4\frac{1}{5}$ cm _____

Find each circumference to the nearest tenth. Use 3.14 for π .

13. $d = 6.4$ mm _____

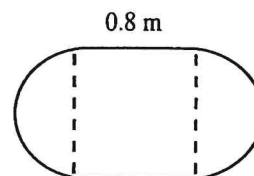
14. $r = 0.8$ cm _____

15. $r = 5.6$ cm _____

16. $d = 21.1$ cm _____

MIXED APPLICATIONS

17. A tabletop is shaped like a square with half-circles on two ends. One side of the square is 0.8 m. To the nearest meter, what is the perimeter of the tabletop?



18. A sundial in a park has a circumference of 57 ft. Find the radius to the nearest foot.

NUMBER SENSE

19. When a number is divided by -3 , the result is 12 more than the number. What is the number?

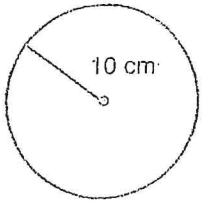
Area: Circle*

Name _____

Date _____

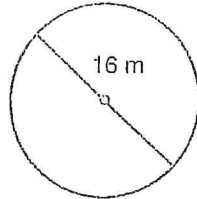
Find the area. (Use 3.14 for π .)

1.



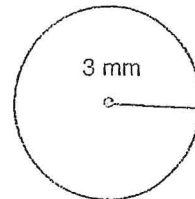
$A \approx$ _____

2.



$A \approx$ _____

3.



$A \approx$ _____

Complete the chart. Round each answer to the nearest whole number.

	Radius	Diameter	Area
4.	7 in.		
5.		42 mm	
6.		22 mm	
7.	6.3 m		
8.		40 km	
9.	4 cm		
0.		10 cm	

Solve.

1. Find the area of a race track that is 0.6 km in diameter.

2. The circumference of a circle is 44 in. What is the area? (Use $\frac{22}{7}$ for π .)

3. The floor of a skating rink is circular and has a radius of 14 meters. What is the area of the floor?

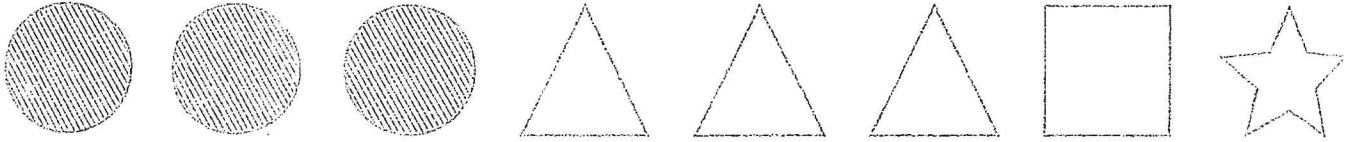
4. A radio transmitter sends signals 40 km in every direction. Over what area do these signals reach?



Ratio

Name _____

Date _____



Use the picture to determine each ratio. Then write each ratio in three different ways.

- The number of unshaded figures to the total number of figures. _____
- The number of shaded figures to unshaded figures. _____
- The number of squares to unshaded figures. _____
- The number of stars to the number of triangles. _____
- The number of squares to the number of triangles. _____
- The number of stars to the number of circles. _____
- The total number of figures to the number of squares. _____
- The number of squares to the number of stars. _____

Express each ratio as a fraction in lowest terms. To express the ratio of two measures as a fraction, both units must be the same.

- | | |
|--|----------------------------------|
| 9. 4 hours to $4\frac{1}{2}$ hours _____ | 10. 3 quarts to 4 pints _____ |
| 11. 1 dollar to 2 dimes _____ | 12. 9 pints to 2 quarts _____ |
| 13. 6 days to 3 weeks _____ | 14. 5 m to 200 cm _____ |
| 15. 400 m to 3 km _____ | 16. 6 dimes to 3 quarters _____ |
| 17. 5 km to 100 m _____ | 18. 3 L to 400 mL _____ |
| 19. 8 quarts to 3 gallons _____ | 20. 2 quarters to 1 dollar _____ |
| 21. 3 feet to 2 yards _____ | 22. 50 cm to 1 m _____ |
| 23. 5 weeks to 2 days _____ | 24. 250 mL to 5 L _____ |
| 25. 6 months to 4 years _____ | 26. 4 days to 4 weeks _____ |
| 27. 1 yard to 7 feet _____ | 28. 20 minutes to 4 hours _____ |

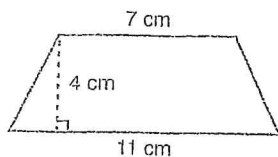
Area: Trapezoids, Mixed Polygons*

Name _____

Date _____

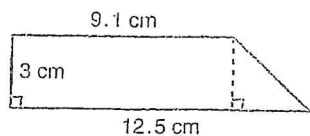
Find the area of each.

1.



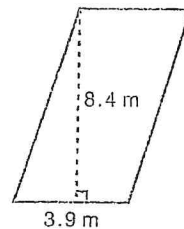
$A =$ _____

2.



$A =$ _____

3.



$A =$ _____

Find the area of each trapezoid. Write the area in the unit of measure indicated. Change units where necessary.

4. bases: 9 cm, 23 mm
height: 8 cm

Area: _____ cm^2

5. bases: 4 ft, 2 yd
height: 2 ft

Area: _____ yd^2

6. bases: 4 m, 600 cm
height: 30 m

Area: _____ m^2

Solve:

7. A tabletop shaped like a trapezoid has parallel bases of 40 cm and 62 cm and a height of 34 cm. Find the area.

8. Lauren placed a square lamp, measuring 25 cm on each edge, on a table shaped like a trapezoid. The table had parallel bases of 32 cm and 48 cm and a height of 34 cm. Find the number of square centimeters not covered by the lamp.

9. A bulletin board is shaped like a trapezoid. If the bases are 45 cm and 65 cm and the height is 40 cm, what is the area?

10. Find the area of a trapezoid having a height of 32 in. and parallel bases measuring 49 in. and 61 in.

11. A trapezoid has a height of 3 yd and parallel bases of 7 ft and 10 ft. What is its area?

12. A line segment drawn parallel to the 12-cm height of a right triangle divides the base into segments of 3 cm and 6 cm and the hypotenuse into segments of 5 cm and 10 cm. This produces a new right triangle and a trapezoid. Find the area of each. (Hint: Use proportion to find the length of the missing side/base. Two sets of answers to the area problem are possible.)

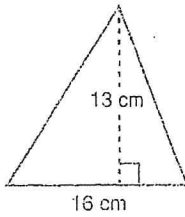
Area: Triangles*

Name _____

Date _____

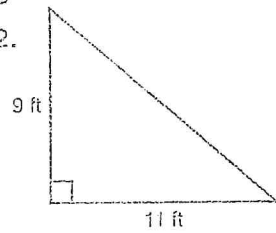
Find the area of each triangle.

1.



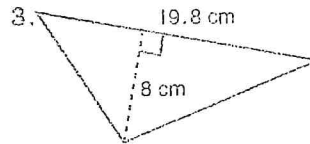
A = _____

2.



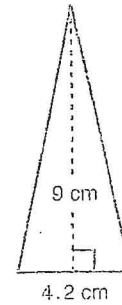
A = _____

3.



A = _____

4.



A = _____

Complete the chart for each triangle.

	base	height	Area
5.	4 m	3 m	
6.	18 cm	31 cm	
7.	3 dm	5.6 dm	
8.	40 m	28 m	
9.	52 cm	90 cm	
10.	3 km	1.6 km	
11.	$6\frac{1}{3}$ yd	15 yd	
12.	15 ft	18 ft	

Solve.

13. Find the area of a triangular sail if the base is 3 m and the height is 5 m.

14. How many square meters of decorative paper would be used for a design made of 6 triangles, each of which has a base of 60 cm and a height of 42 cm?

15. A gardener planted flowers in a triangular corner of his garden. What is the area of the flower bed if its base is 20 ft and its height is 16.5 ft?

16. The perimeter of an equilateral triangle is 18 cm and the height is 5.2 cm. What is the area of the triangle?

Name _____ Date _____

Variables and Equations

Solving Basic Equations

$$\begin{aligned}4x + 4 &= 12 \\4x + 4 - 4 &= 12 - 4 \\4x &= 8 \\x &= 2\end{aligned}$$

Solve each equation for the given variable.

1. $7x - 12 = 2$

2. $7a - 4 = 24$

3. $4b - 7 = 37$

4. $3c - 9 = 9$

5. $4.7 = -3.4m - 5.5$

6. $8 - 9y = 35$

7. $8 - 12x = 32$

8. $1.3x + 5 = -5.4$

9. $3(x + 4) + 5 = 35$

10. $0 = 25x + 75$

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

12. $5 - \frac{1}{2}x = -9$

13. $2x = 6 + (-18)$

14. $7 - \frac{1}{9}k = 32$

15. $32 = \frac{4}{6}x - 34$

16. $\frac{3}{12}x + 2 = 11$

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

18. $\frac{x}{3} - 8 = -12$

19. $5(e + 5) = -10$

20. $8 - \frac{1}{2}y = -6$

Variables and Equations**Solving Basic Equations**

$$\begin{aligned}9x + 3 &= 30 \\9x + 3 - 3 &= 30 - 3 \\9x &= 27 \\x &= 3\end{aligned}$$

Solve each equation for the given variable.

1. $5t - 8 = -28$

2. $4k + 7 = -9$

3. $13x + 7 = -32$

4. $2x + 12 = 6$

5. $7.2 + 4x = 19.2$

6. $2(w - 6) = 8$

7. $7h + 1 = -13$

8. $3(c - 2) = 15$

9. $6x - 5 = -41$

10. $-3 + 2n = -15$

11. $5e + (-9) = 26$

12. $\frac{m}{3} - 7 = -10$

13. $6x - 2 = 34$

14. $-8(r - 2) = 40$

15. $5n - 8 = -23$

16. $2 + \left(\frac{1}{5}\right)x = -7$

17. $5 - \left(\frac{1}{2}\right)g = 12$

18. $3x - 4 = 14$

19. $-6 = \frac{3u}{4} + 12$

20. $2(f + 7) - 8 = 22$

Equations

Solving Addition Equations

$$\begin{aligned} 1.4 &= -2.4 + x \\ 1.4 + 2.4 &= -2.4 + 2.4 + x \\ 3.8 &= 0 + x \\ 3.8 &= x \end{aligned}$$

Solve each equation for the variable.

1. $x + (-5\frac{3}{4}) = -10\frac{1}{4}$

2. $-35 = x + 35$

3. $w + 79 = -95$

4. $-\frac{1}{4} + x = -\frac{1}{4}$

5. $7 + c = -14$

6. $-4.5 = 9\frac{1}{2} + c$

7. $-21 = t + 18$

8. $22 = c + (-13)$

9. $-9 + r = 22$

10. $x + (-8) = 9$

11. $3.5 = n + 4.6$

12. $-2\frac{1}{2} + k = -3\frac{5}{7}$

13. $-2,929 + t = 4,242$

14. $z + 5.2 = 7.1$

Equations**Solving Subtraction Equations**

$$\begin{aligned} 32 &= x - (-8) \\ 32 &= x + 8 \\ 32 - 8 &= x \\ 24 &= x + 0 \\ 24 &= x \end{aligned}$$

Solve each equation for the variable.

1. $-2,547 = n - 5,534$

2. $-44 = m - 32$

3. $t - (-8) = 45$

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

5. $-15 = p - 6$

6. $3.65 = n - 7$

7. $34 = b - (-2)$

8. $a + (-4\frac{1}{3}) = -15\frac{1}{3}$

9. $f - 16 = -32$

10. $x - 8 = 34$

11. $-3.4 = h - 8.5$

12. $-2.2 = 8\frac{4}{5} - d$

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

14. $z - (-21.5) = -2.356$

Name _____ Date _____

Equations

Solving Equations with Two Operations

$$\begin{aligned}2y - 10 &= 30 \\2y - 10 + 10 &= 30 + 10 \\ \frac{2y}{2} &= \frac{40}{2} \\ y &= 20\end{aligned}$$

Solve each equation for the variable. Write the answer in simplest form.

1. $14 = 6c - 4$

2. $13n - 13 = -12$

3. $5x - 5 = -10$

4. $23x - 12 = -33$

5. $10 = 3y + 5$

6. $-42 = 6b + 8$

7. $-23 = 3e - (-9)$

8. $16 + 4y = -32$

9. $-8r - 9 = -24$

10. $16 + \frac{r}{2} = -11$

11. $12 = 3y - 12$

12. $2x - 5 = 16$

13. $\frac{3y}{4} = 12$

14. $16 = -2v + 9$

Equations**Solving Multiplication and Division Equations**

$$2y = -12$$

$$2y \div 2 = -12 \div 2$$

$$1y = -6$$

$$y = -6$$

$$\frac{n}{2} = 8$$

$$2 \cdot \frac{n}{2} = 8 \cdot 2$$

$$n = 16$$

Solve each equation for the variable.

1. $6n = -72$

2. $-77 = \frac{t}{11}$

3. $12a = 156$

4. $\frac{f}{3.6} = 16$

5. $(\frac{1}{5})m = 22$

6. $-12r = 12$

7. $54 = -9u$

8. $-6 = \frac{x}{6}$

9. $(\frac{2}{3})c = 5.9$

10. $\frac{h}{9} = 63$

11. $3.7 = -0.21w$

12. $4.5 = 9y$

13. $(2\frac{3}{5})a = 6$

14. $(\frac{5}{12})b = -12$