

VARIABLES & EXPRESSIONS

Translate each algebraic expression or verbal expression.

| VERBAL EXPRESSION | ALGEBRAIC EXPRESSION |
|--|----------------------|
| 8 times a number x is subtracted by 4 | |
| | $6x^2 + 7$ |
| 5 increased by the product of -3 and a number x | |
| | $3x + 4y - 2$ |
| 3 times the sum of a number x and 7 | |
| | $\frac{x}{2} + 4x$ |
| A number y cubed plus x squared decreased by 7 | |
| | $5(x - 4) + 2$ |
| the difference of x and y is divided by 3 and added by 8 | |
| | $-2(x + 4)^2 - 1$ |

ORDER OF OPERATIONS

Simplify each expression using the order of operations.

| | |
|-------------------------------|--|
| 1. $5 - 6 + 2(3)$ | 2. $4 + 5(7 - 1) + \frac{8}{2}$ |
| 3. $-9(4 + 2) - 2(3) + 4^2$ | 4. $7 - 2[-6 - (3 + 1)] - \frac{8 + 7}{3}$ |
| 5. $0.5(-8 - 4) + 3(8 - 2^2)$ | 6. $3 - 5(2) - 7(5^2 - 4^2)$ |
| 7. $2(3)^2 - 4(3) + 1$ | 8. $4(3 - 5)^3 + 5$ |

THE NUMBER PROPERTIES

Match each expression with the property that it shows.

$$5 + 0 = 5$$

Commutative Property
of Addition

$$5(1) = 5$$

Associative Property
of Addition

$$5(0) = 0$$

Additive Identity

$$2 + 3 = 3 + 2$$

Distributive Property

$$2(3) = 3(2)$$

Commutative Property
of Multiplication

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

Associative Property
of Multiplication

$$2(3 \cdot 4) = (2 \cdot 3)4$$

Zero Product Property

$$3(2 + 5) = 6 + 15$$

Multiplicative Identity

EVALUATING EXPRESSIONS

Evaluate each expression given the following values for each variable.

| | | | | | |
|---------|----------|---------|----------|---------|----------|
| $a = 2$ | $b = -3$ | $c = 4$ | $d = -5$ | $e = 6$ | $f = -7$ |
|---------|----------|---------|----------|---------|----------|

| | |
|----------------------------------|---------------------------|
| 1. $2a + 3d$ | 2. $b^2 - e^2$ |
| 3. $-3c - (a + d) + f$ | 4. $2(b - e) + (f + c)^2$ |
| 5. $\frac{d - c}{3} - 4(ab + f)$ | 6. $c(ab - 1) + de - f^2$ |

COMBINING LIKE TERMS

Combine like terms for each expression.

| EXPRESSION | SIMPLIFIED |
|-----------------------|------------|
| $x + x + 3x + y$ | |
| $y + 2y + 5x + x$ | |
| $5 + z + z + 4z - 6$ | |
| $3x + 4x - 5$ | |
| $5c + 2b - 3c$ | |
| $x + y + 2x$ | |
| $6a - 5b + a$ | |
| $4 + 3x - 7 - 8x$ | |
| $3(x + 2) - 4$ | |
| $-5(x - 3) + 7x$ | |
| $5m - 6n - 9m$ | |
| $-8a - 9b - 10a + 9b$ | |
| $2(x + 4) + 5x - 3$ | |
| $-10(2 + x) - 3x$ | |

SOLVING ONE-STEP EQUATIONS

Solve the one-step equations.

$$x + 7 = 9$$

$$5 + x = -3$$

$$6 = x + 8$$

$$x - 9 = 1$$

$$-5 + x = -2$$

$$4 = x - 7$$

$$5x = 75$$

$$-2x = -64$$

$$-7.5 = 1.25x$$

$$\frac{x}{4} = 7$$

$$-\frac{x}{2} = 8$$

$$-3 = -\frac{x}{9}$$

$$\frac{3}{4}x = 7$$

$$-\frac{1}{2}x = 8$$

$$-5 = -\frac{2}{9}x$$

SOLVING TWO-STEP EQUATIONS

Solve the two-step equations. Leave your answer as a simplified fraction.

$$2x + 7 = 9$$

$$5 + 4x = -3$$

$$6 = 2x + 8$$

$$4x - 9 = 1$$

$$-5 + 3x = -2$$

$$4 = -x - 7$$

$$5x + 10 = 75$$

$$-2x + 8 = -64$$

$$-7.5 = 1.25x + 2.5$$

$$\frac{x}{4} - 6 = 7$$

$$-\frac{x}{2} + 3 = 8$$

$$-3 = 8 - \frac{x}{9}$$

$$\frac{3}{4}x + 5 = 7$$

$$-\frac{1}{2}x - 4 = 8$$

$$-5 = -\frac{2}{9}x + 2$$

SOLVING PROPORTIONS

Solve each proportion. Leave your answer as a simplified fraction or decimal.

$$\frac{x}{3} = \frac{4}{6}$$

$$\frac{6}{5} = \frac{x}{4}$$

$$\frac{3}{5} = \frac{6}{x}$$

$$\frac{x}{7} = \frac{1}{6}$$

$$\frac{6}{x} = \frac{2.5}{2}$$

$$\frac{4.5}{3} = \frac{9}{x}$$

$$\frac{x}{3} = \frac{4.2}{10}$$

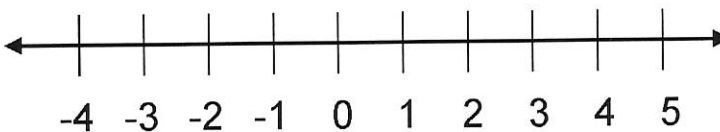
$$\frac{11}{x} = \frac{2.5}{5.5}$$

$$\frac{6}{5} = \frac{12}{x}$$

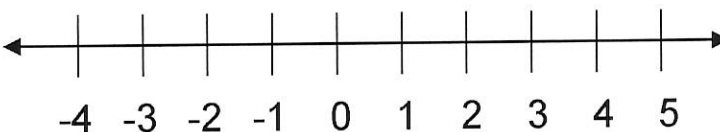
GRAPHING INEQUALITIES

Graph each inequality on the number line shown.

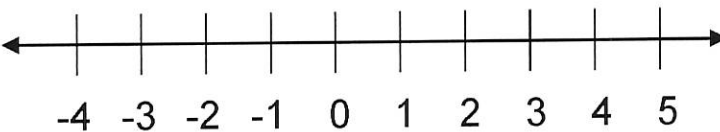
$x > 2$



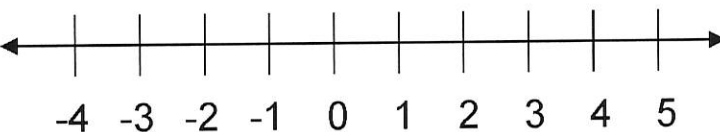
$x < -3$



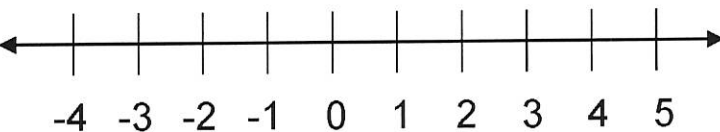
$x \geq -1$



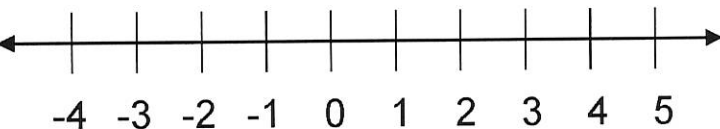
$x \leq 4$



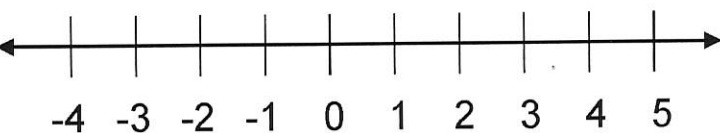
$x < 0$



$x \geq 0$



$x > -2$

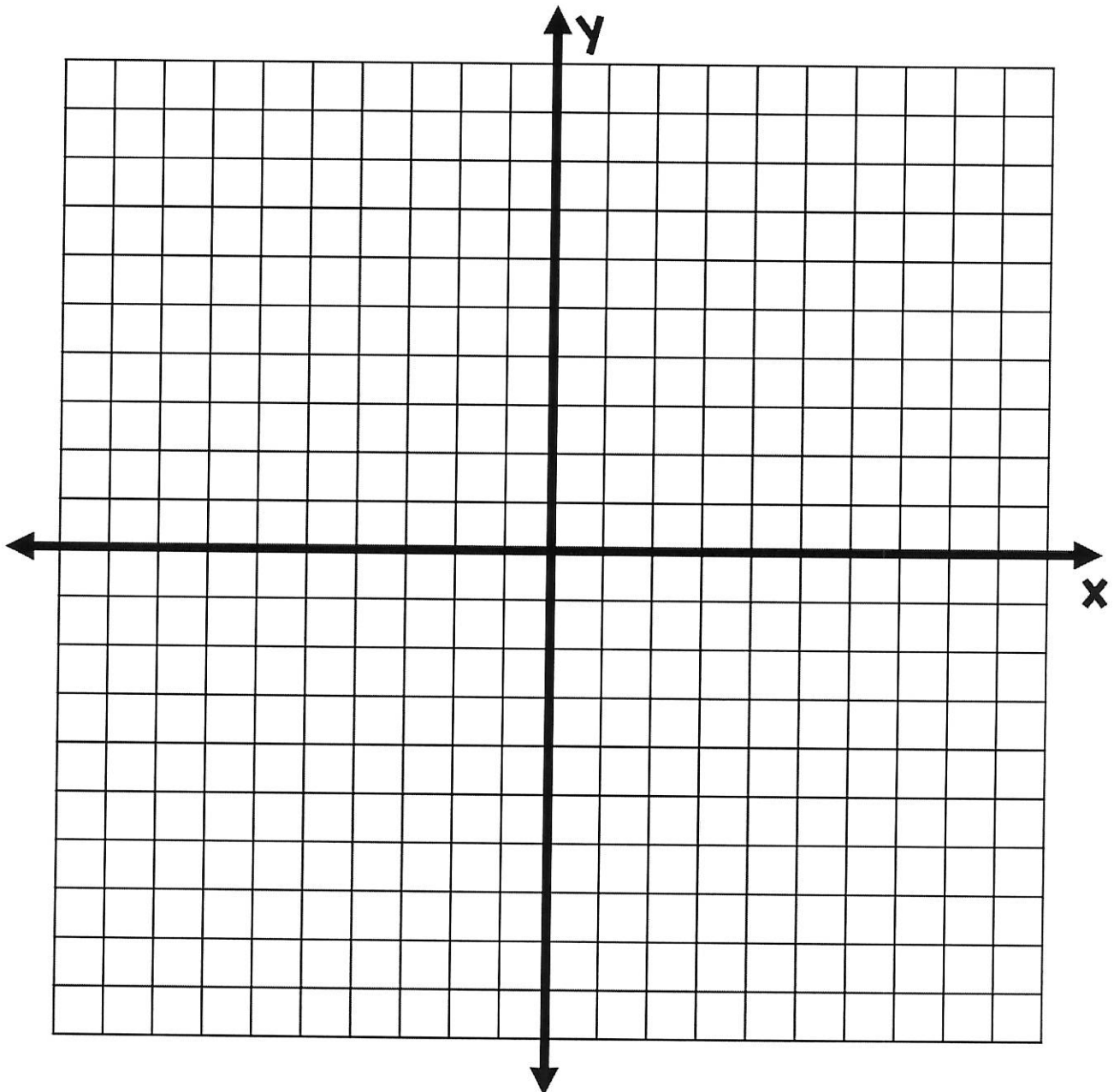


THE COORDINATE PLANE

Plot each point on the coordinate plane and name the quadrant the point is in.

| POINT | QUADRANT |
|----------|----------|
| A(3, 4) | |
| B(5, -7) | |
| C(0, -5) | |
| D(-9, 2) | |

| POINT | QUADRANT |
|-----------|----------|
| E(-1, -2) | |
| F(-8, 0) | |
| G(10, 3) | |
| H(-4, 8) | |

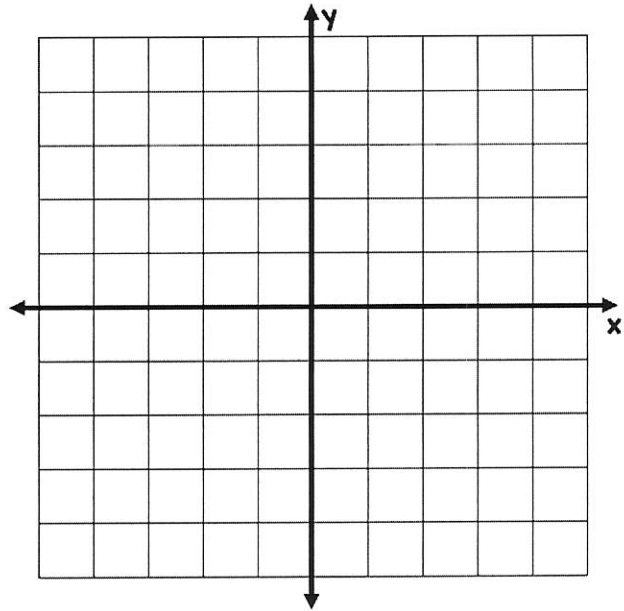


GRAPHING BY MAKING A TABLE

Graph the equations by using substitution to complete a table of values.

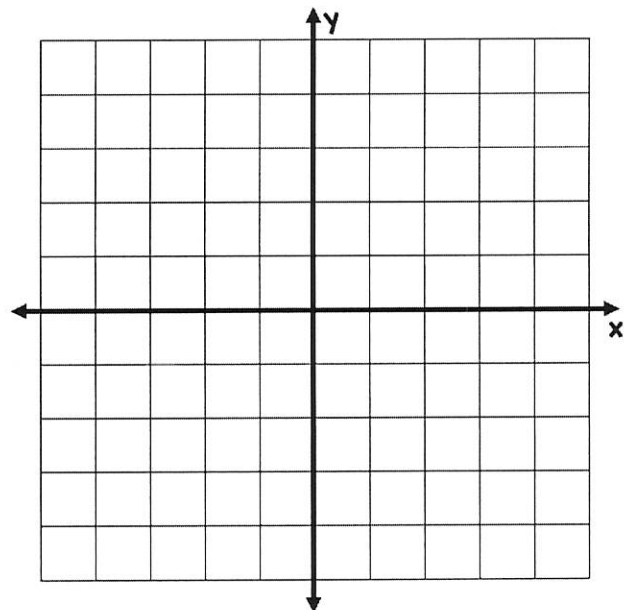
$$y = x + 2$$

| x | y |
|----|---|
| -2 | |
| -1 | |
| 0 | |
| 1 | |
| 2 | |



$$y = 2x - 1$$

| x | y |
|----|---|
| -2 | |
| -1 | |
| 0 | |
| 1 | |
| 2 | |



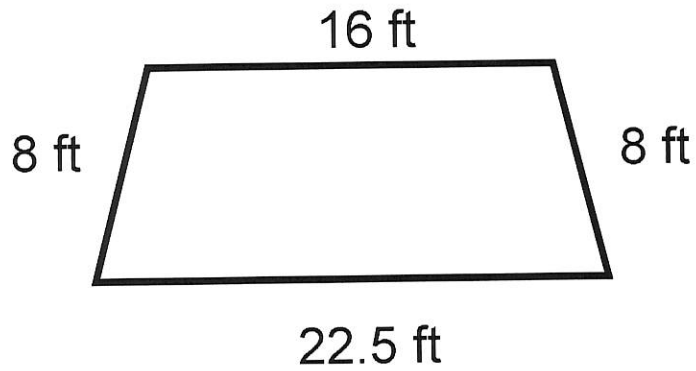
BASIC EXPONENT RULES

Simplify each expression using exponent rules.

| EXPRESSION | SIMPLIFIED |
|---|------------|
| $x \cdot x$ | |
| $y \cdot y \cdot y \cdot y$ | |
| $x \cdot x \cdot y \cdot y \cdot y$ | |
| $y \cdot z \cdot z \cdot z \cdot z \cdot z$ | |
| $x^2 \cdot x^3$ | |
| $x^5 \cdot x^4$ | |
| $y^6 \cdot y$ | |
| $(x^4)^3$ | |
| $(y^3)^2$ | |
| $x^2 \cdot x \cdot y^3 \cdot y^4$ | |
| $a^4 \cdot b^8 \cdot a^5 \cdot b^2$ | |
| $c^3 \cdot d \cdot c^4 \cdot b$ | |
| $\frac{x^5}{x^2}$ | |
| $\frac{y^8}{y^3}$ | |

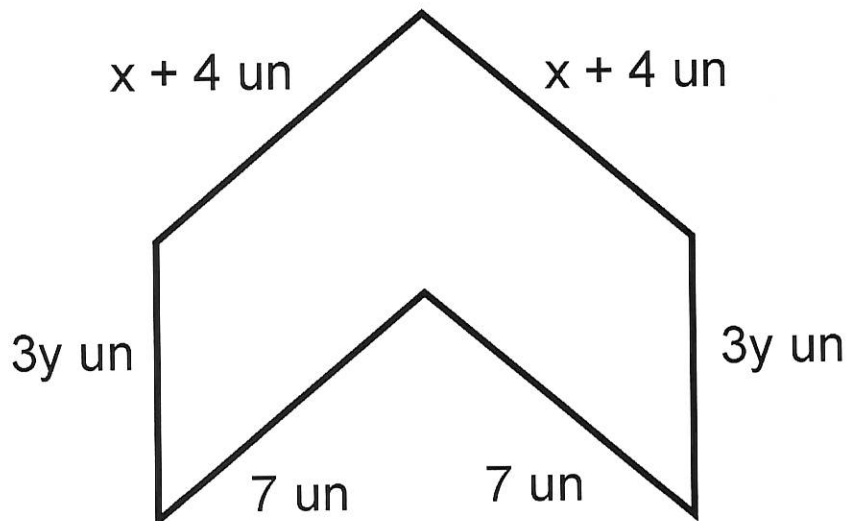
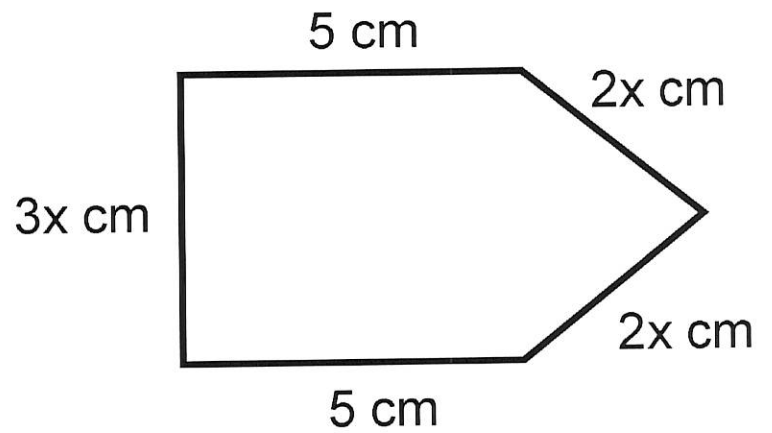
CALCULATING PERIMETER

Determine the perimeter of each figure.



$P =$

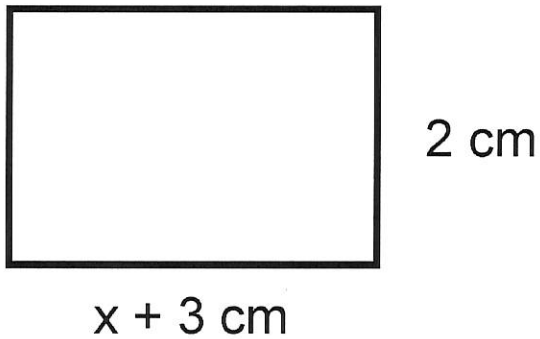
$P =$



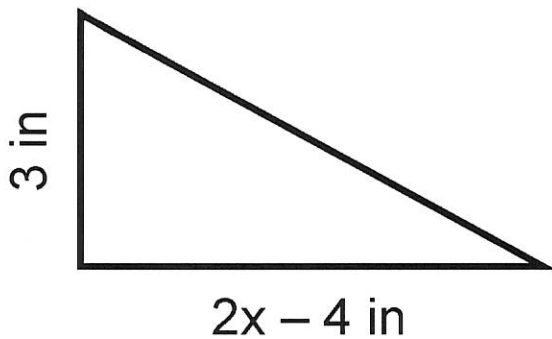
$P =$

CALCULATING AREA

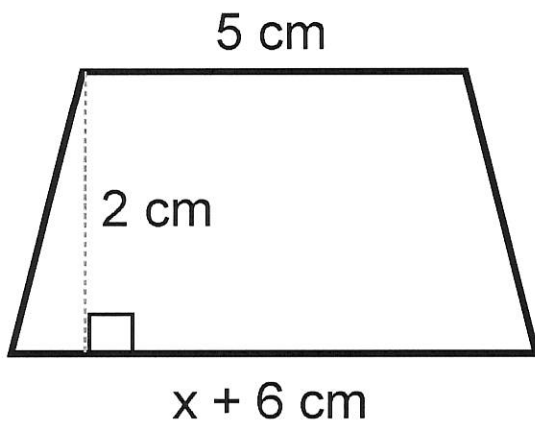
Determine the area of each figure.



A =



A =



A =

PERFECT SQUARE NUMBERS

Complete the perfect squares chart. Fill in as many as you can without a calculator.

| | | | |
|----------|--|----------|--|
| $1^2 =$ | | $16^2 =$ | |
| $2^2 =$ | | $17^2 =$ | |
| $3^2 =$ | | $18^2 =$ | |
| $4^2 =$ | | $19^2 =$ | |
| $5^2 =$ | | $20^2 =$ | |
| $6^2 =$ | | $21^2 =$ | |
| $7^2 =$ | | $22^2 =$ | |
| $8^2 =$ | | $23^2 =$ | |
| $9^2 =$ | | $24^2 =$ | |
| $10^2 =$ | | $25^2 =$ | |
| $11^2 =$ | | $30^2 =$ | |
| $12^2 =$ | | $40^2 =$ | |
| $13^2 =$ | | $50^2 =$ | |
| $14^2 =$ | | $60^2 =$ | |
| $15^2 =$ | | $70^2 =$ | |