

Grade 6 Mathematics

Vocabulary Word Wall Cards

Mathematics vocabulary word wall cards provide a display of mathematics content words and associated visual cues to assist in vocabulary development. The cards should be used as an instructional tool for teachers and then as a reference for all students. **The cards are designed for print use only.**

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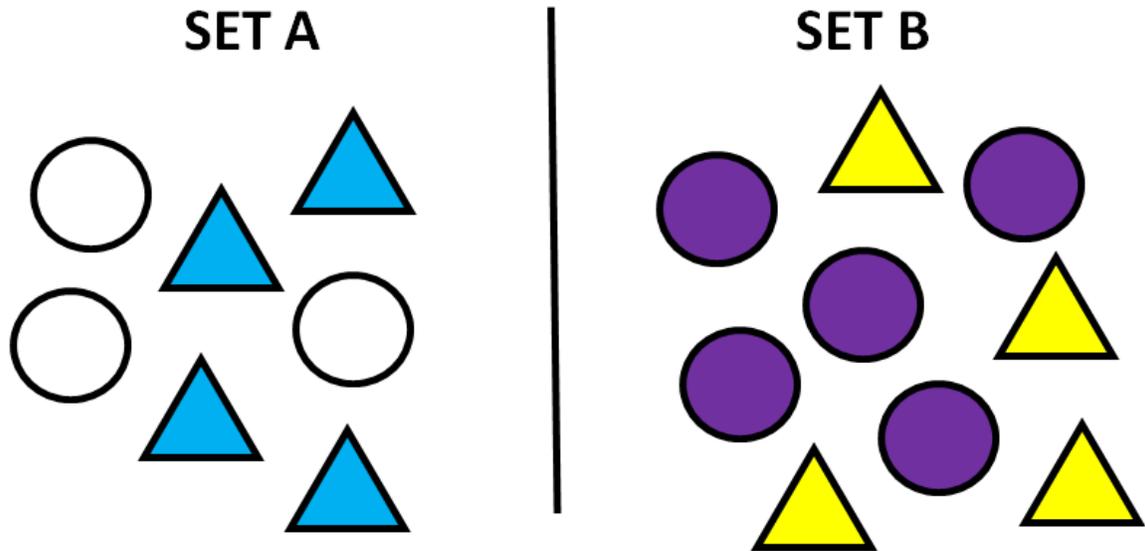
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Ratio

a comparison of any two quantities



 to 	4 to 3 or 4:3
 to all of set A	4 to 7 or 4:7 or $\frac{4}{7}$
 (set A) to  (set B)	3 to 5 or 3:5
set B to set A	9 to 7 or 9:7

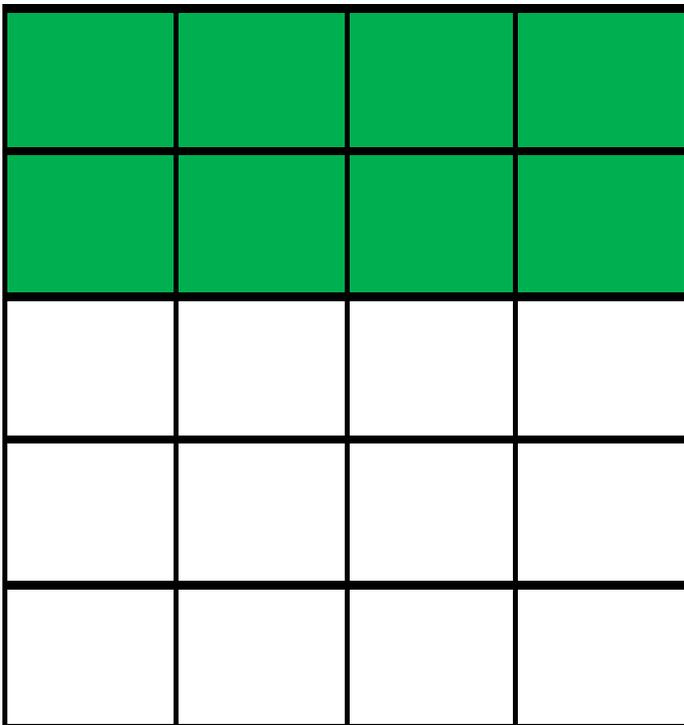
Equivalent Relationships

$$56\% = \frac{56}{100} = \frac{14}{25} = 0.56$$

$$2\frac{4}{9} = 2.444\dots = 244.\overline{4}\%$$

$$1.8 = 180\% = \frac{180}{100} = 1\frac{4}{5}$$

Equivalent Relationships



Fraction: $\frac{8}{20} = \frac{2}{5}$

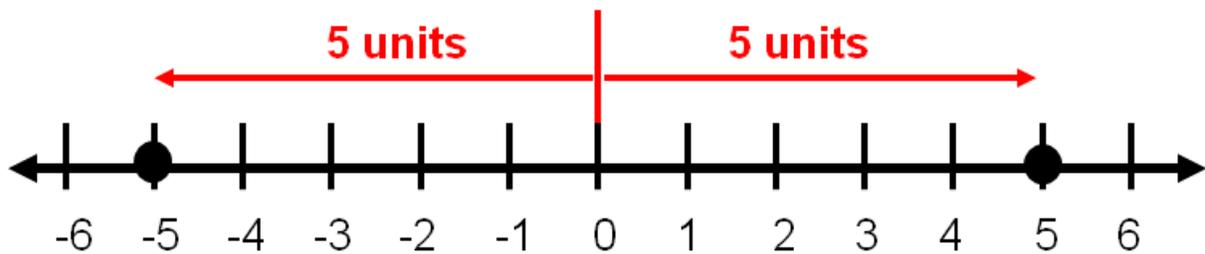
Decimal: 0.4

Percent: 40%

Absolute Value

distance a number is from zero

$$|5| = 5 \quad |-5| = 5$$



Perfect Squares

$$0^2 = 0 \cdot 0 = \mathbf{0}$$

$$1^2 = 1 \cdot 1 = \mathbf{1}$$

$$2^2 = 2 \cdot 2 = \mathbf{4}$$

$$3^2 = 3 \cdot 3 = \mathbf{9}$$

$$4^2 = 4 \cdot 4 = \mathbf{16}$$

$$5^2 = 5 \cdot 5 = \mathbf{25}$$

$$6^2 = 6 \cdot 6 = \mathbf{36}$$

$$7^2 = 7 \cdot 7 = \mathbf{49}$$

$$8^2 = 8 \cdot 8 = \mathbf{64}$$

$$9^2 = 9 \cdot 9 = \mathbf{81}$$

$$10^2 = 10 \cdot 10 = \mathbf{100}$$

Exponential Form

The diagram illustrates exponential form with two examples. The first example is $2^3 = 2 \cdot 2 \cdot 2$. A red arrow points from the word "base" to the number 2, and another red arrow points from the word "exponent" to the number 3. The second example is $n^4 = n \cdot n \cdot n \cdot n$. A red arrow points from the word "base" to the letter n, and another red arrow points from the word "exponent" to the number 4. A black bracket is drawn under the four n's in the second equation, with the word "factors" written below it.

base

exponent

$$2^3 = 2 \cdot 2 \cdot 2$$
$$n^4 = n \cdot n \cdot n \cdot n$$

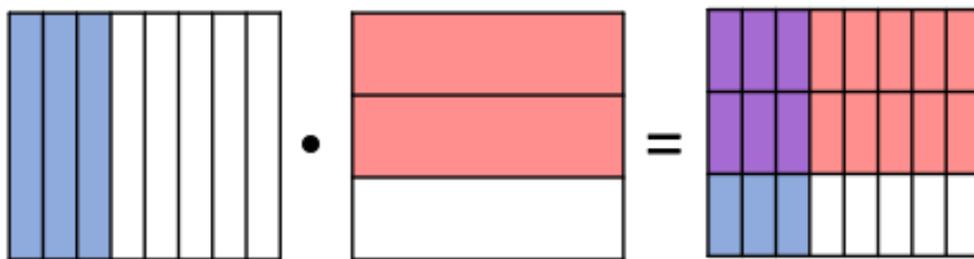
factors

Powers of Ten

Power of Ten	Meaning	Value
10^5	$10 \cdot 10 \cdot 10 \cdot 10 \cdot 10$	100,000 <i>One hundred thousand</i>
10^4	$10 \cdot 10 \cdot 10 \cdot 10$	10,000 <i>Ten thousand</i>
10^3	$10 \cdot 10 \cdot 10$	1,000 <i>One thousand</i>
10^2	$10 \cdot 10$	100 <i>One hundred</i>
10^1	10	10 <i>Ten</i>
10^0	1	1 <i>One</i>

Fraction Multiplication

How much is $\frac{3}{8}$ of $\frac{2}{3}$?



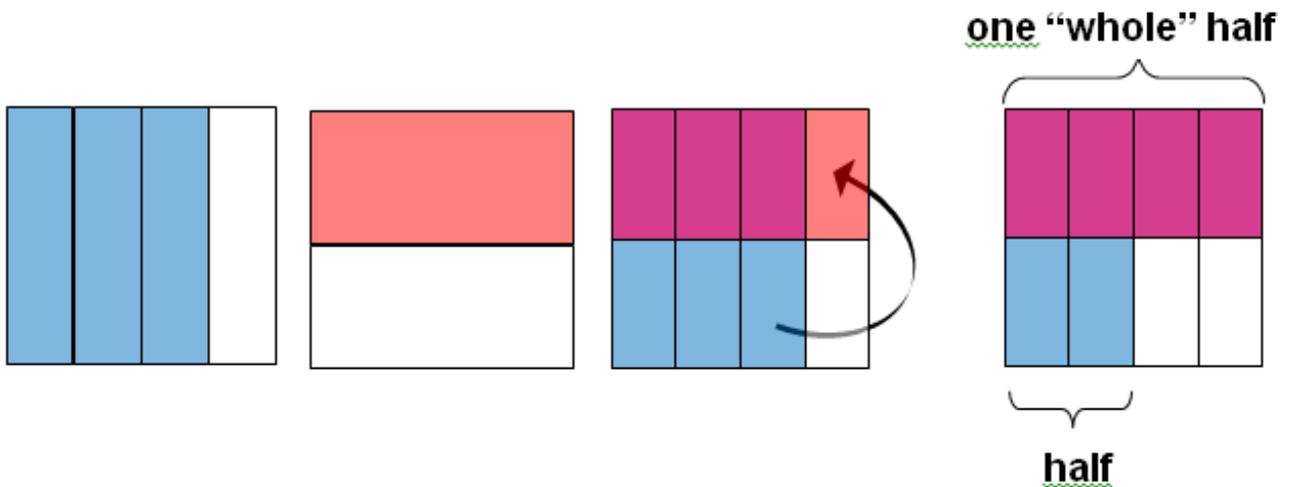
$$\frac{3}{8} \cdot \frac{2}{3} = \frac{6}{24}$$

$$\frac{3}{8} \cdot \frac{2}{3} = \frac{6}{24} = \frac{1}{4}$$

Fraction Division

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

How many halves are in three-fourths?

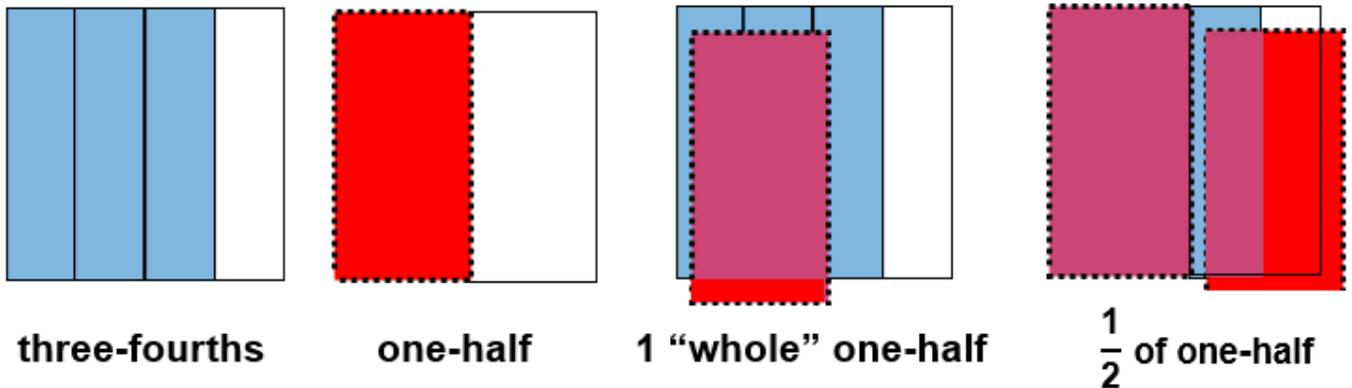


$$\frac{3}{4} \div \frac{1}{2} = 1 \frac{1}{2}$$

Fraction Division

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

How many halves are in three-fourths?



There are $1\frac{1}{2}$ halves in three-fourths.

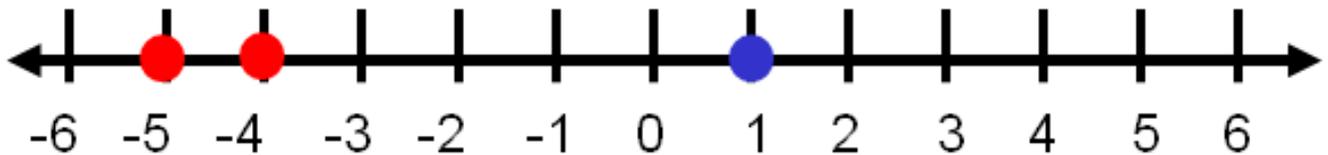
$$\frac{3}{4} \div \frac{1}{2} = 1\frac{1}{2}$$

Multiplication and Division of Decimals

Multiplier	Multiply	Value
1	$27 \cdot 1$	27
0.1	$27 \cdot 0.1$	2.7
0.01	$27 \cdot 0.01$	0.27
0.001	$27 \cdot 0.001$	0.027

Divisor	Divide	Value
1	$27 \div 1$	27
0.1	$27 \div 0.1$	270
0.01	$27 \div 0.01$	2,700
0.001	$27 \div 0.001$	27,000

Comparing Integers



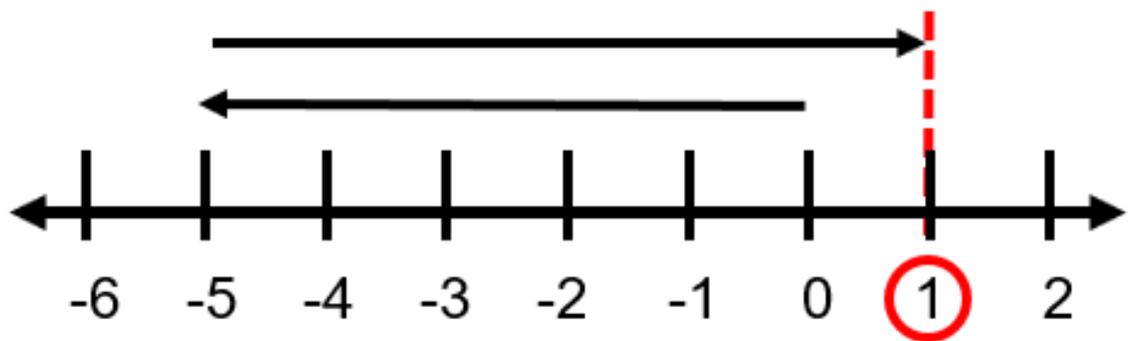
$$-5 < 1 \text{ or } 1 > -5$$

$$-5 < -4 \text{ or } -4 > -5$$

Integer Operations

Addition

$$-5 + 6 = 1$$



Subtraction

$$1 - 6 = -5$$

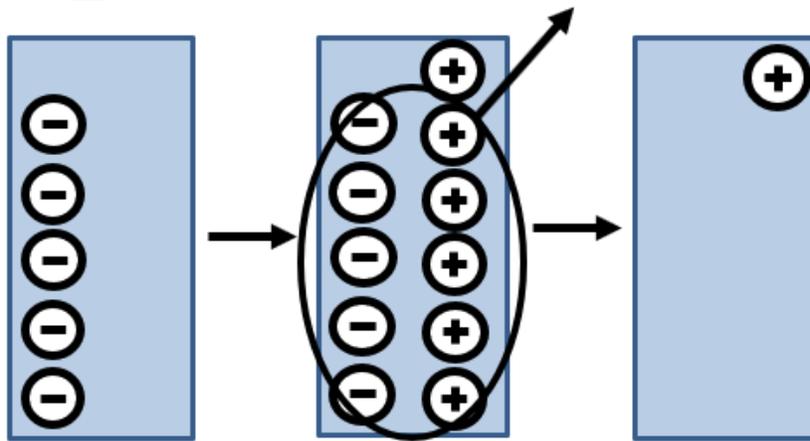


Integer Operations

Key: \oplus = positive 1 \ominus = negative 1 $\ominus \oplus$ = 0 pair

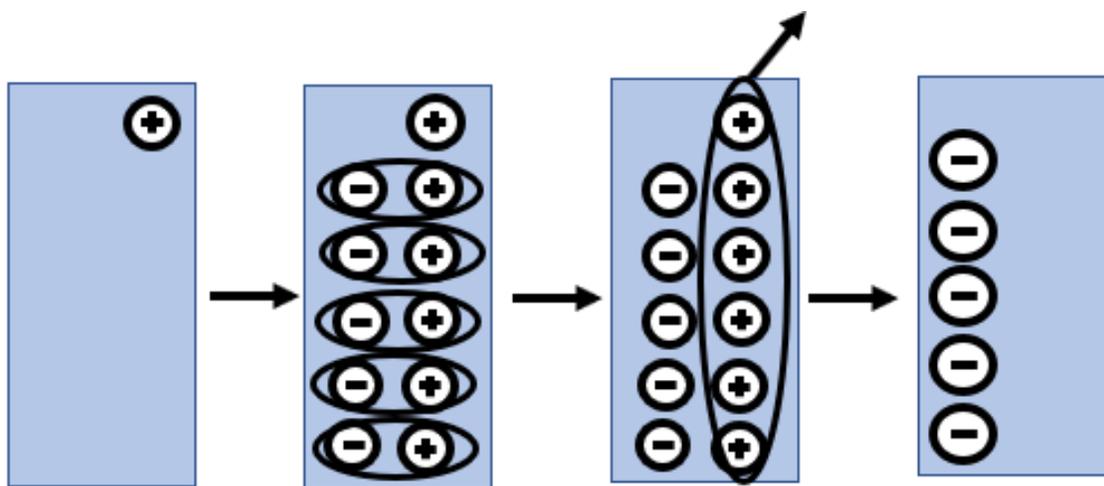
Addition

$$-5 + 6 = 1$$



Subtraction

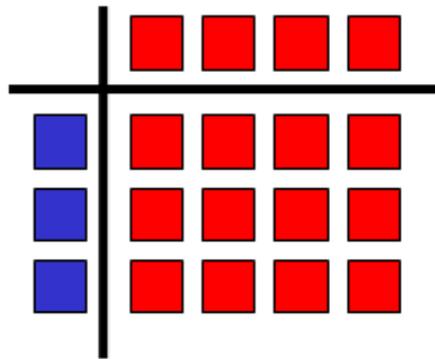
$$1 - 6 = -5$$



Integer Operations

Multiplication

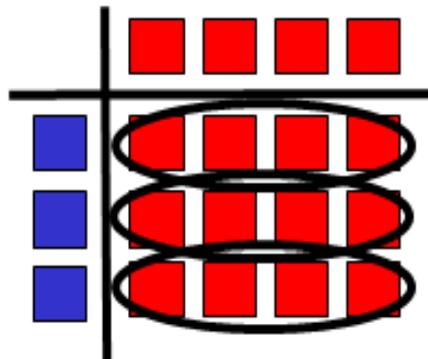
$$3 \cdot (-4) = -12$$



How many tiles are in 3 groups of -4 tiles?

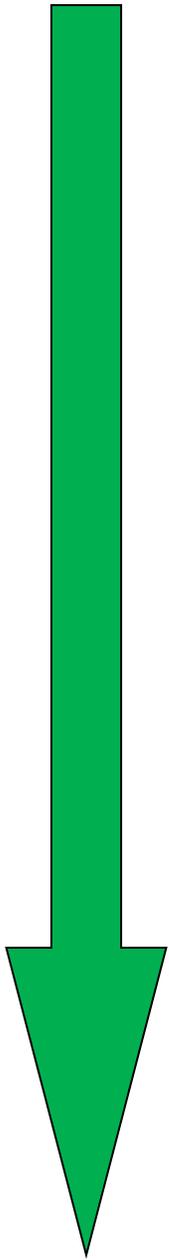
Division

$$-12 \div -4 = 3$$



How many groups of -4 tiles are in -12 tiles?

Order of Operations



Grouping Symbols

()

| |

—

Exponents

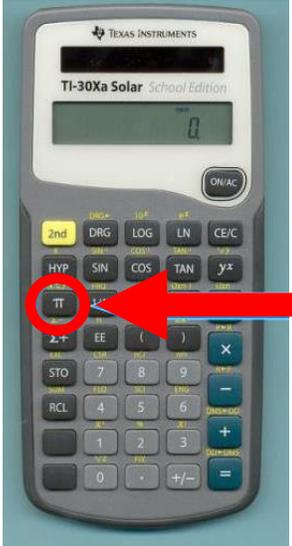
Multiplication
or **D**ivision

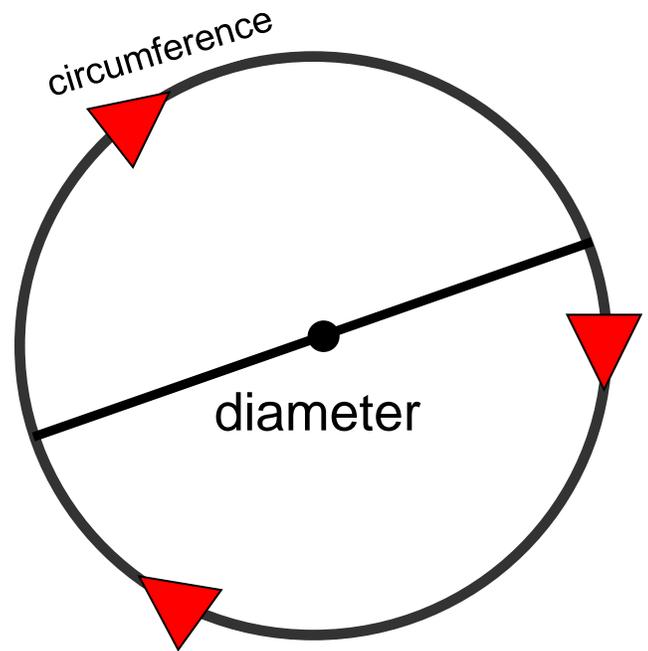
Left
to
right

Addition
or **S**ubtraction

Left
to
right

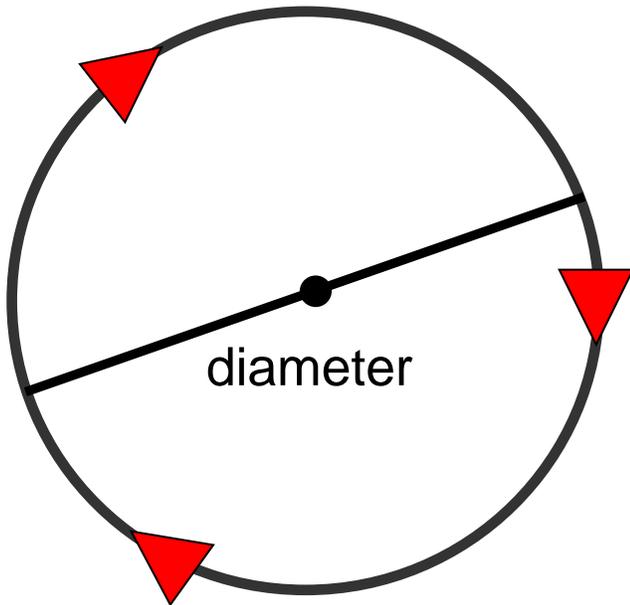
Pi

π approx	3.14159...
	3.14
	$\frac{22}{7}$
	

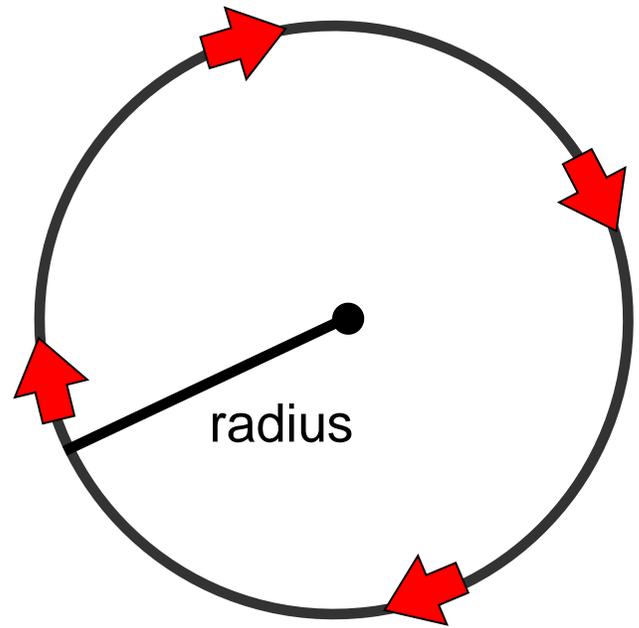


$$\pi = \frac{\text{circumference}}{\text{diameter}}$$

Circumference



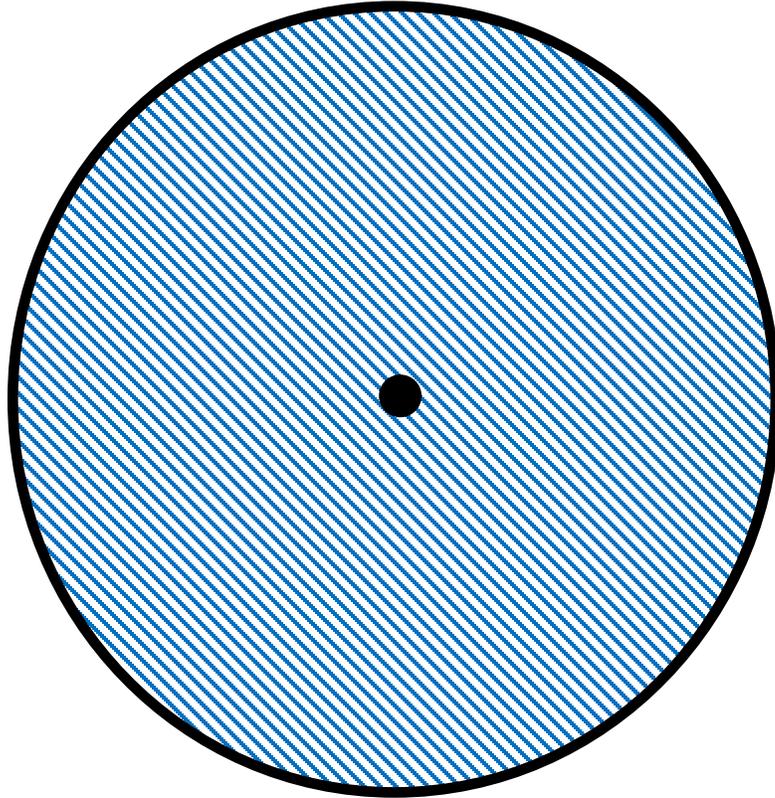
$$C = \pi d$$



$$C = 2\pi r$$

C = perimeter of a circle

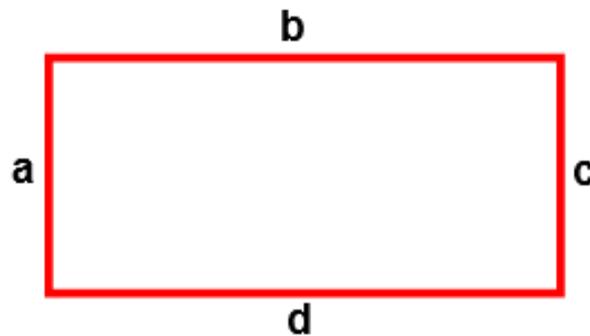
Area of a Circle



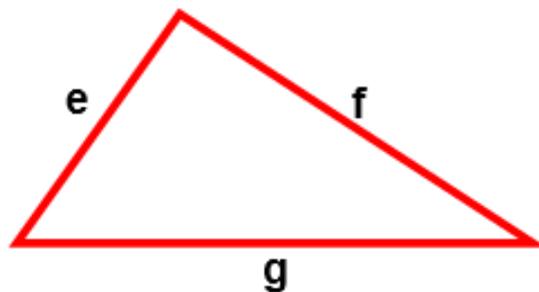
$$A = \pi r^2$$

Perimeter

the measure of the distance
around a figure



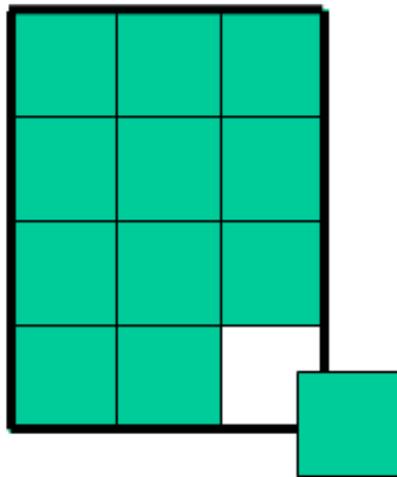
$$P = a + b + c + d$$



$$P = e + f + g$$

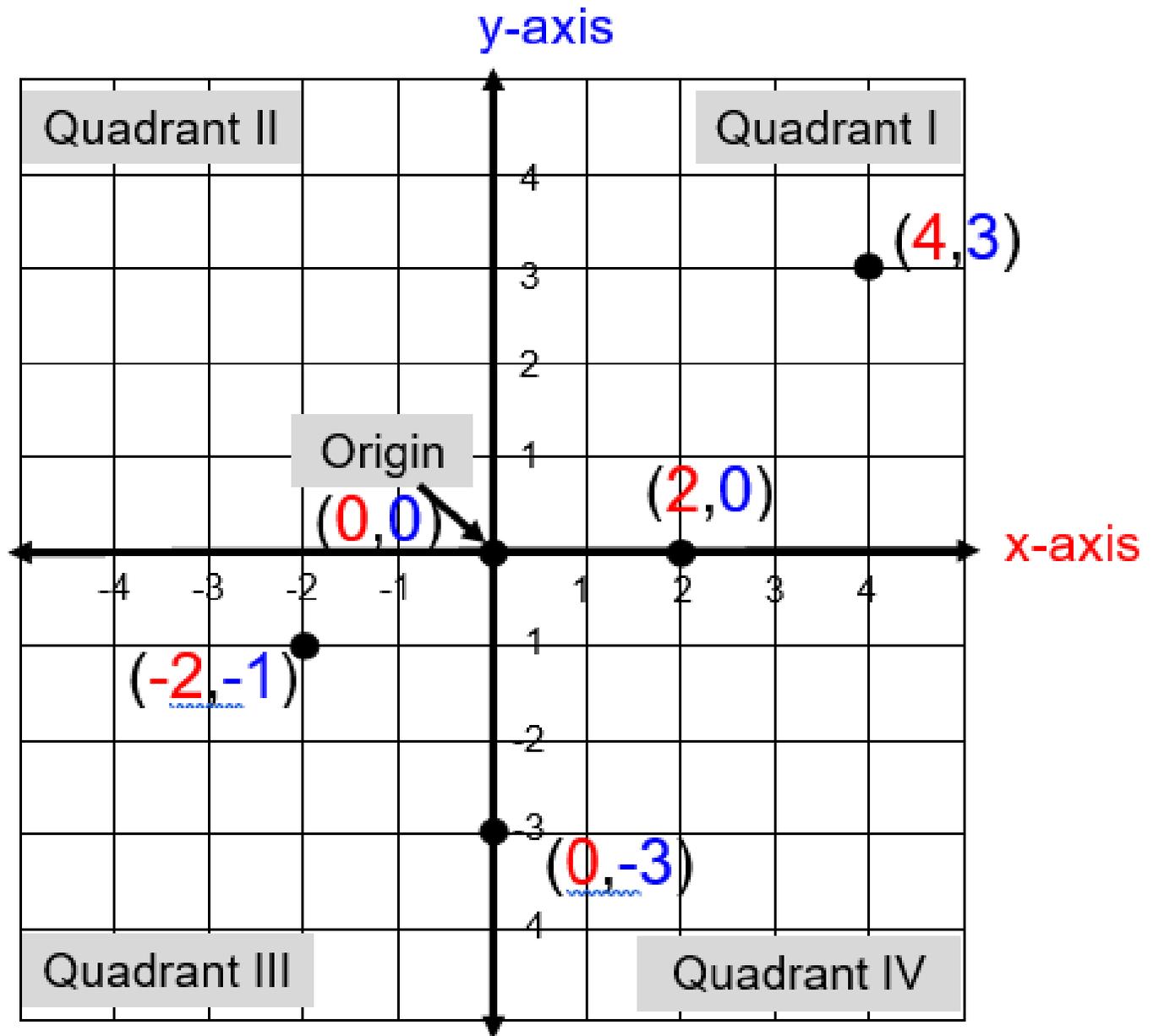
Area

the number of square units
needed to cover a surface or
figure



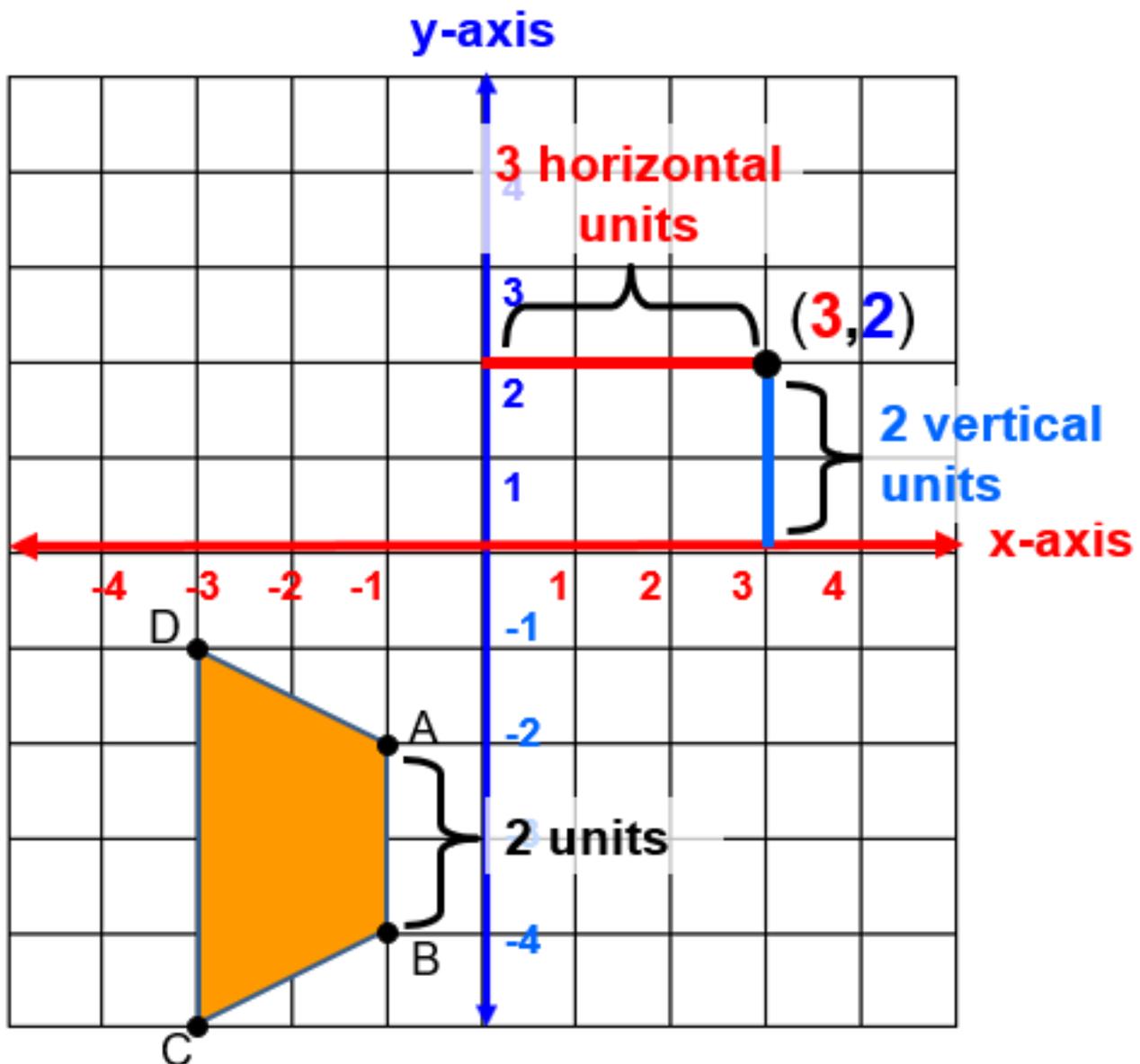
Area = 12 Square Units

Coordinate Plane



ordered pair (x,y)

Coordinate Plane



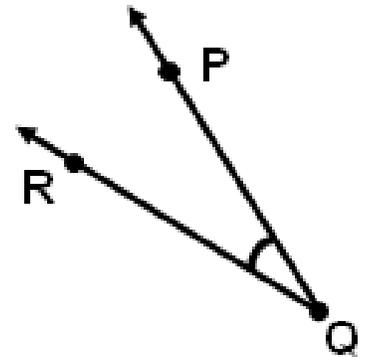
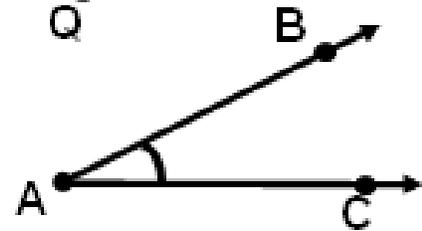
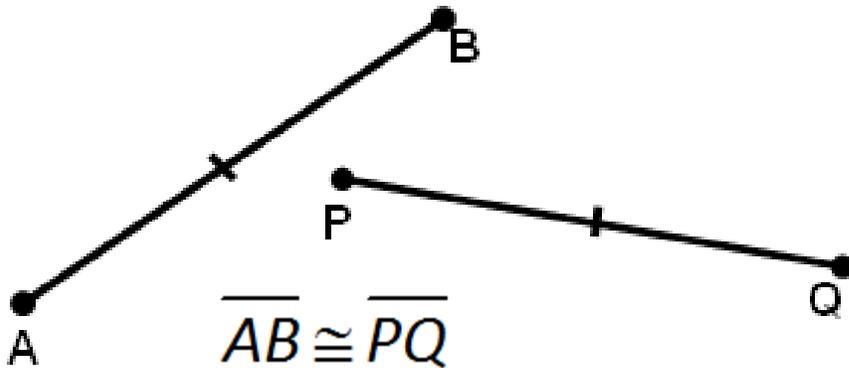
What is the length of side AB in the figure ABCD?

A(-1,-2) and B(-1,-4)

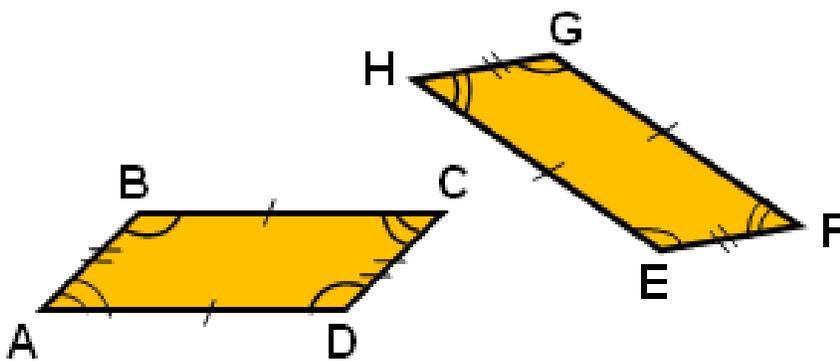
The length of AB is $|-2 - (-4)|$ or $|-4 - (-2)|$ or 2 units.

Congruent Figures

have exactly the
same shape and size



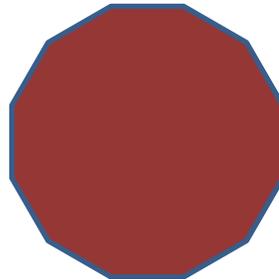
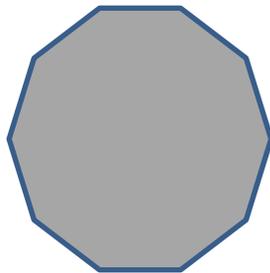
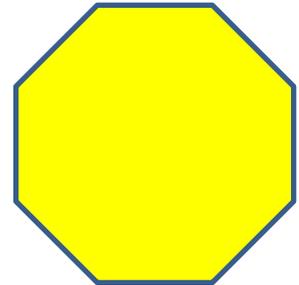
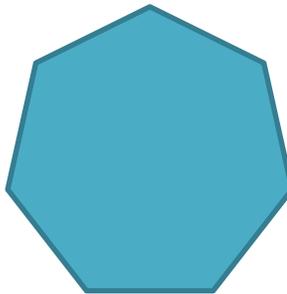
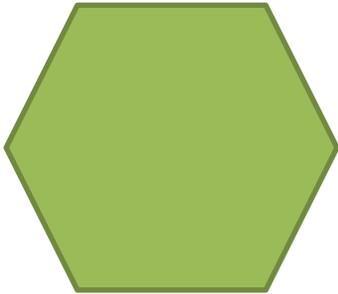
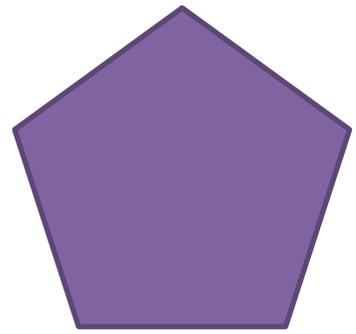
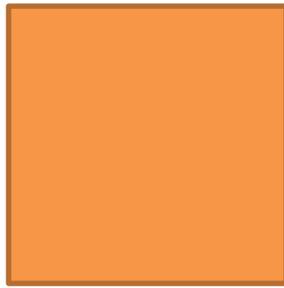
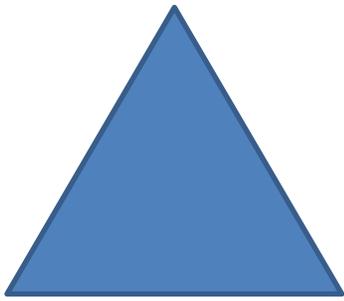
$$\angle BAC \cong \angle PQR$$



$$\square ABCD \cong \square HGFE$$

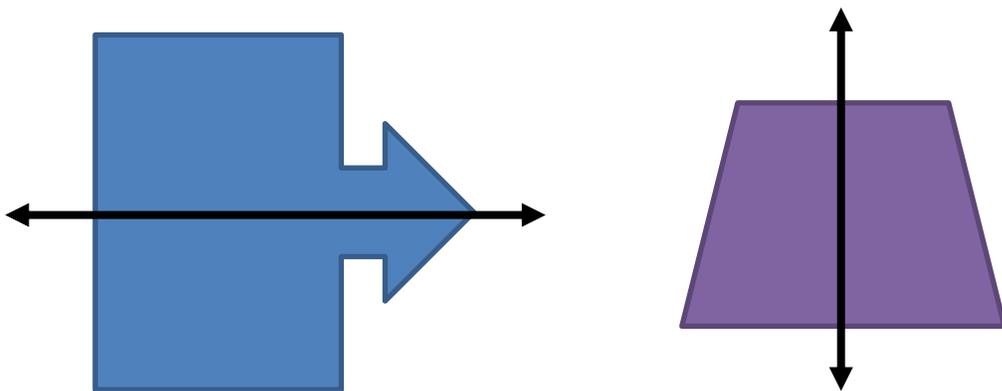
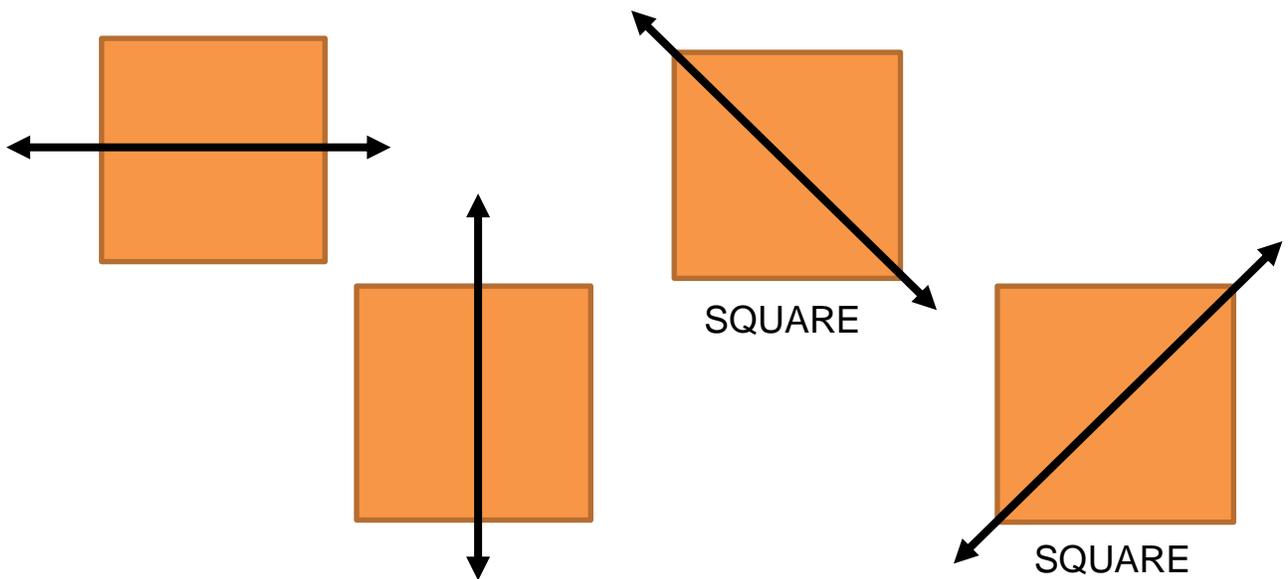
Regular Polygons

have congruent sides and
congruent interior angles



Line of Symmetry

divides a figure into two congruent parts, each of which are mirror images of the other

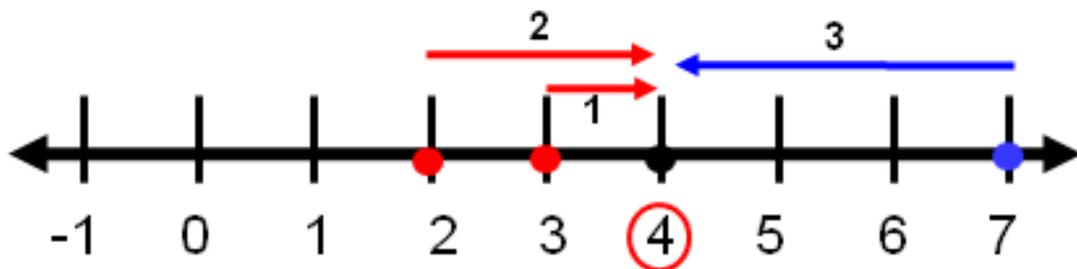


Mean

a measure of central tendency
(the numerical average of a
data set)

2, 3, 4, 7

Balance Point



$$\frac{2+3+4+7}{4} = \frac{16}{4} = \textcircled{4}$$

Median

a measure of central tendency
(the middle value of a data set
ranked in order)

6, 7, 8, 9, 9



8 = median

5, 6, 8, 9, 11, 12



8.5 = median

Mode

a measure of central tendency
(the data value that occurs most frequently)

Data Sets	Mode
2, 3, 3, 3, 5, 5, 9, 10	3
5.2, 5.4, 5.5, 5.6, 5.8, 5.9, 6.0	none
1, 1, 2, 5, 6, 7, 7, 9, 11, 12	1, 7



bimodal

Range

difference between the greatest and least values in a data set

Data set

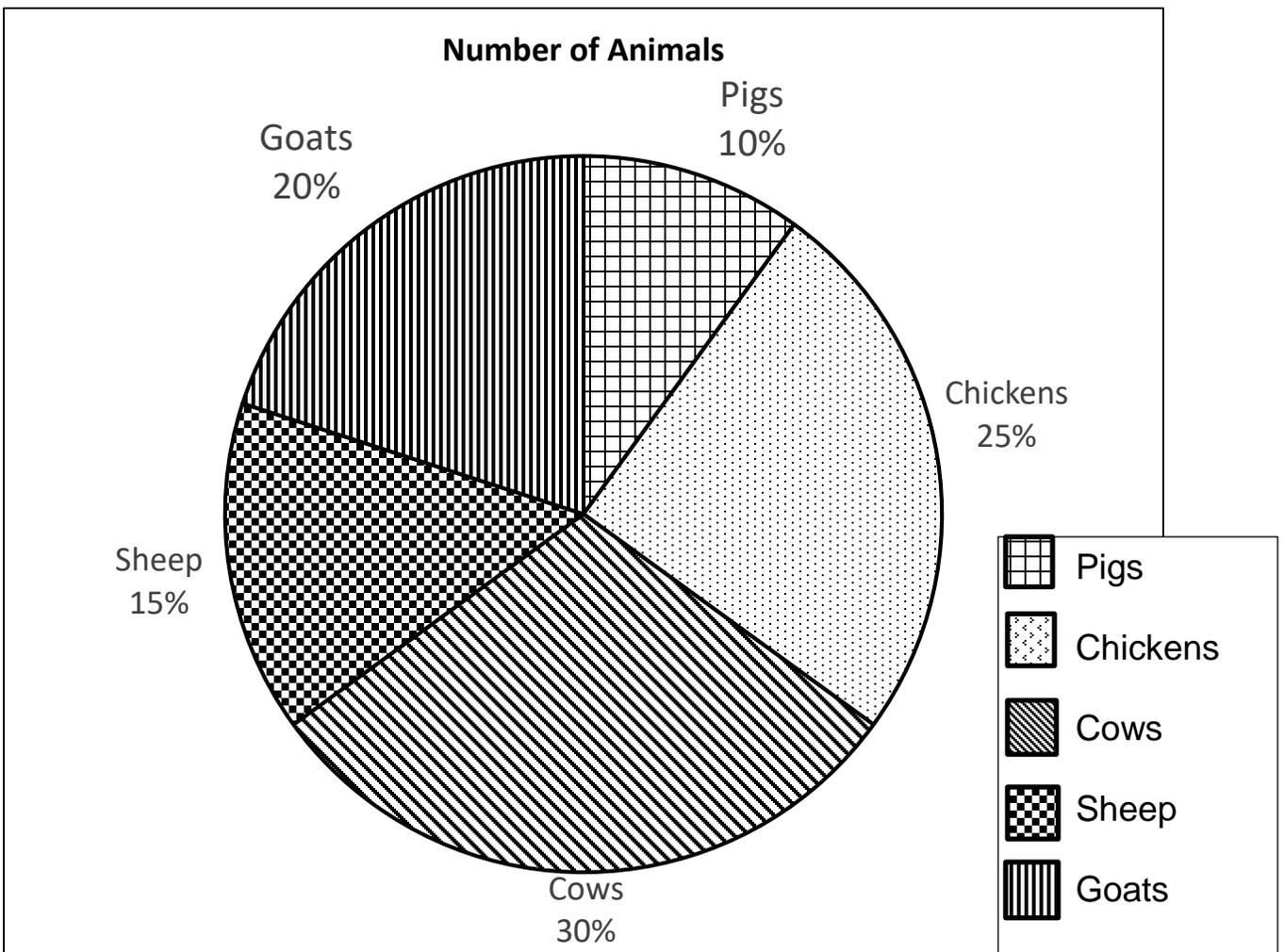
$2\frac{1}{2}$, 3, $3\frac{3}{4}$, $3\frac{7}{8}$, 5, $5\frac{1}{2}$, $9\frac{1}{6}$, $10\frac{4}{5}$, $15\frac{1}{2}$, 20

$$20 - 2\frac{1}{2} = 17\frac{1}{2}$$

$$\text{Range} = 17\frac{1}{2}$$

Circle Graph

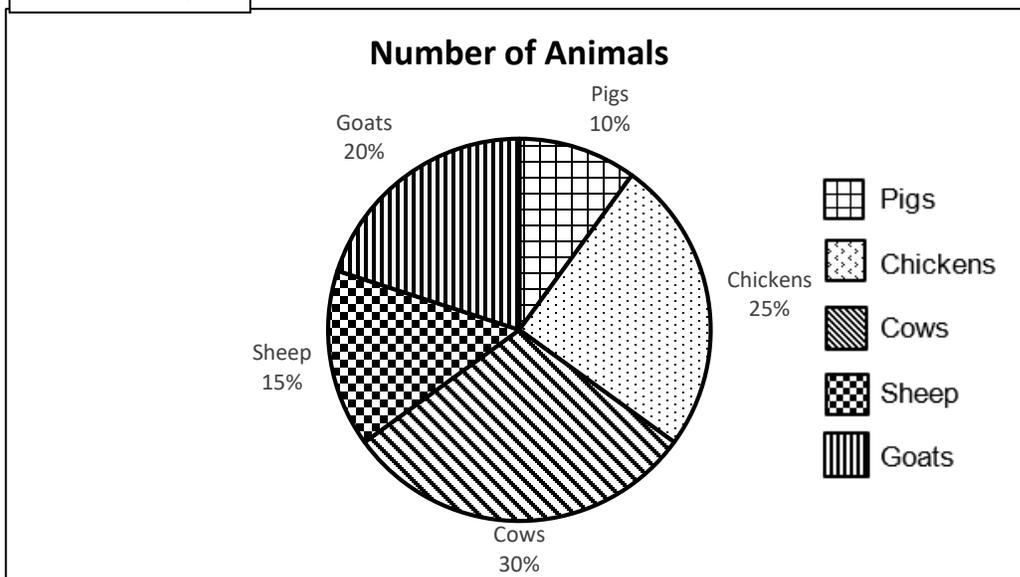
Types of Animals on Mr. Segal's Farm



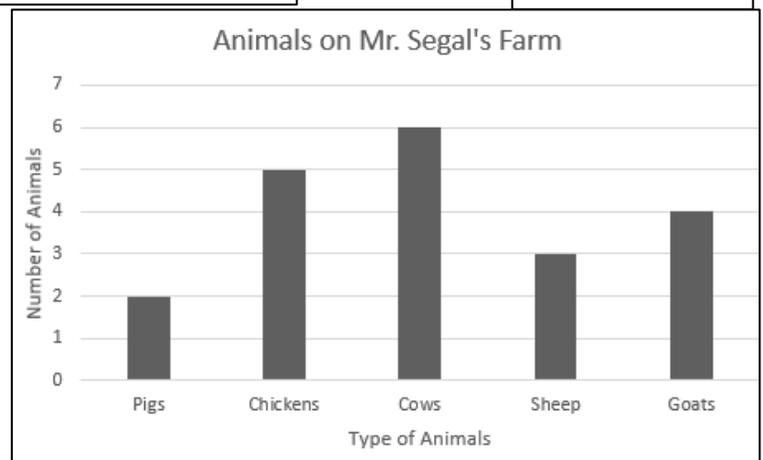
Comparing Graphs

Types of Animals on Mr. Segal's Farm

Circle Graph



Bar Graph

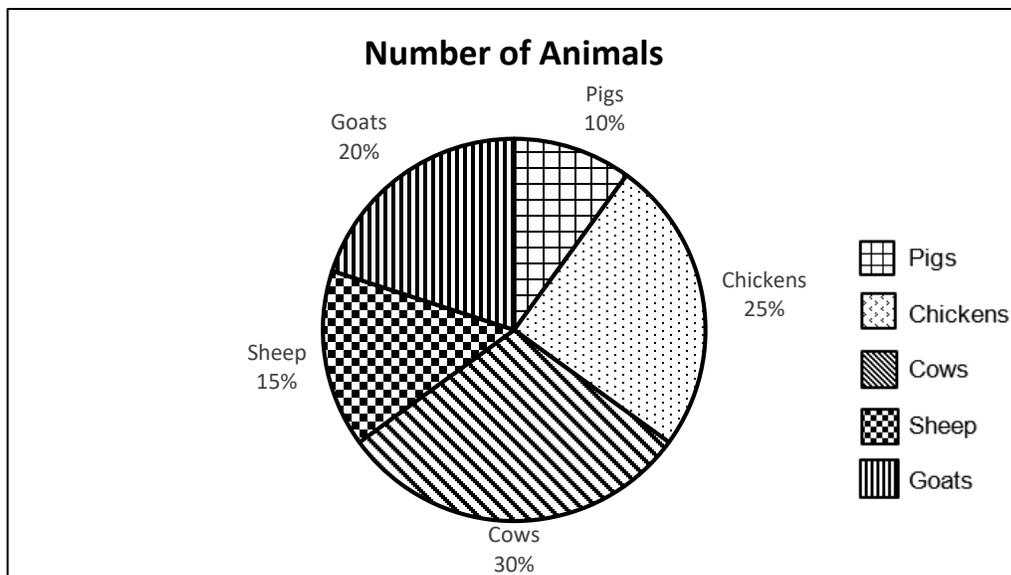


- Which graph(s) shows the type of animal that is most common on Mr. Segal's farm?
- Which graph(s) shows how many pigs are on Mr. Segal's farm?
- Which graph(s) help(s) determine the total number of animals on Mr. Segal's farm?
- Which graph(s) help(s) determine for which type of animals there are 3 or more?
- Which graph(s) help(s) determine the percent of animals with four legs?

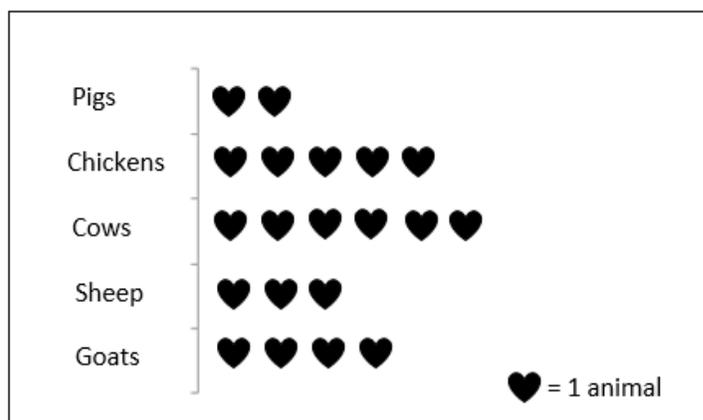
Comparing Graphs

Types of Animals on Mr. Segal's Farm

Circle Graph



Pictograph

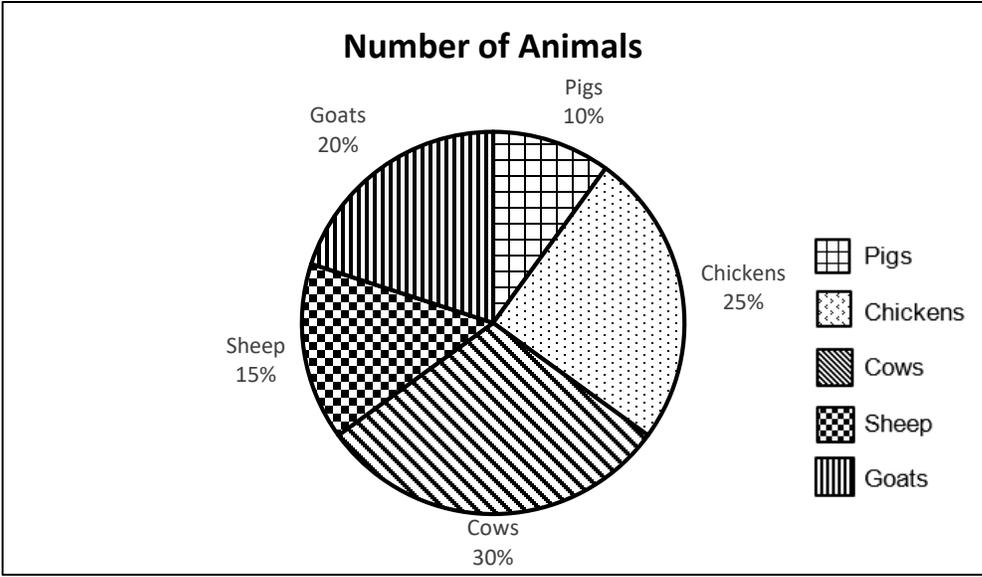


- Which graph(s) shows the type of animal that is most common on Mr. Segal's farm?
- Which graph(s) shows how many pigs are on Mr. Segal's farm?
- Which graph(s) help(s) determine the total number of animals on Mr. Segal's farm?
- Which graph(s) help(s) determine for which type of animals there are 3 or more?
- Which graph(s) help(s) determine the percent of animals with four legs?

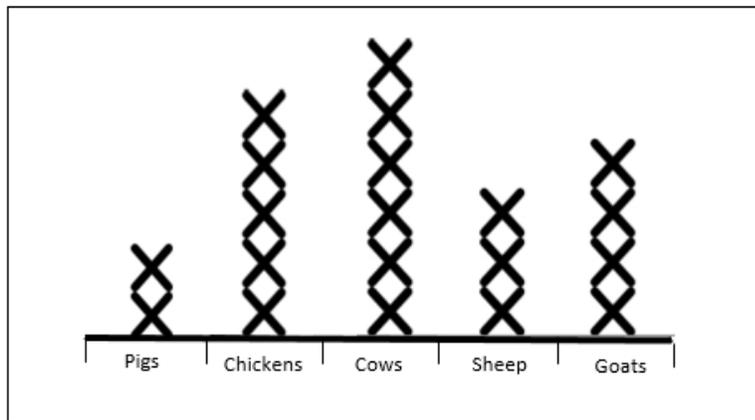
Comparing Graphs

Types of Animals on Mr. Segal's Farm

Circle Graph



Line Plot



Which graph(s) shows the type of animal that is most common on Mr. Segal's farm?
 Which graph(s) shows how many pigs are on Mr. Segal's farm?
 Which graph(s) help(s) determine the total number of animals on Mr. Segal's farm?
 Which graph(s) help(s) determine for which type of animals there are 3 or more?
 Which graph(s) help(s) determine the percent of animals with four legs?

Ratio Table

a table of values representing a proportional relationship that includes pairs of equivalent ratios

The ratio of y to x in a proportional relationship is 8:4, create a ratio table.

x	y
1	2
2	4
3	6
4	8
11	22

$$\frac{y}{x} = \frac{2}{1} = \frac{6}{3} = \frac{8}{4} = \frac{22}{11}$$

Proportional Relationship

Ratio Table Example

Terry's neighbor pays him \$17 for every 2 hours he works. Terry works for 8 hours on Saturday.

A ratio table represents the proportional relationship:

Hours	1	2	4	8
Pay in \$?	17	34	?

Note: Red arrows in the original image point from 2 to 4 and 17 to 34, with a multiplier of 8.5 shown between the columns.

How much does Terry earn per hour?

$$\frac{17}{2} = \frac{?}{1} \quad \text{Terry earns } \$8.50 \text{ per hour}$$

How much will Terry earn in 8 hours?

$$\$8.50 \cdot 8 = 68.00 \quad \text{He will earn } \$68.00 \text{ in 8 hours.}$$

Unit Rate

number of units of the first quantity of a ratio compared to 1 unit of the second quantity

Example: A store advertises \$25 for 5 DVDs. Find the cost for 1 DVD or unit rate.

$$\frac{25}{5} = \frac{?}{1}$$

The unit rate is \$5.00 for 1 DVD

Unit Rate

Examples

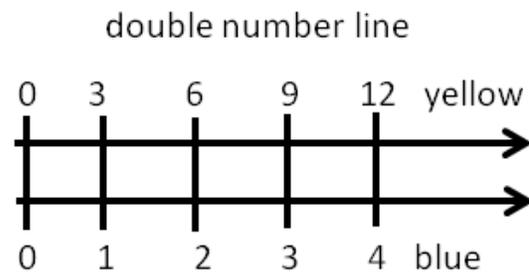
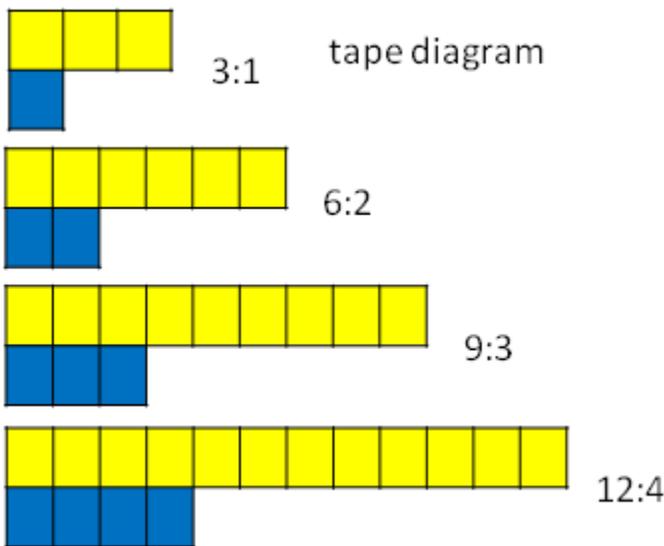
$$\text{\$2 per gallon} = \frac{\text{\$2}}{1 \text{ gallon}}$$

$$70 \text{ miles per hour} = \frac{70 \text{ miles}}{1 \text{ hour}}$$

Connecting Representations

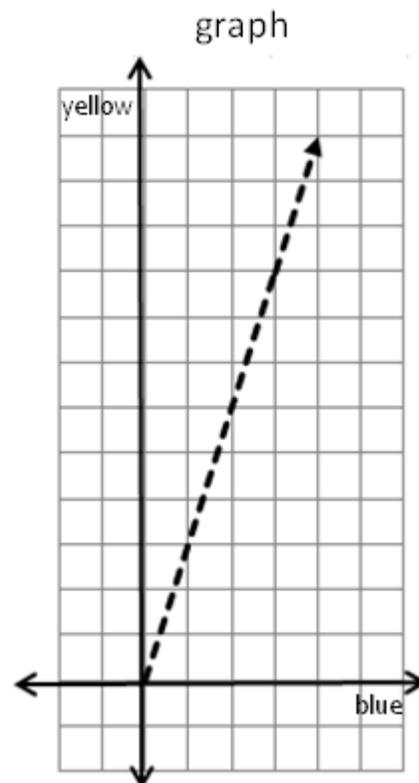
The ratio of gallons of yellow paint to gallons of blue paint is 3:1.

Find three equivalent ratios.



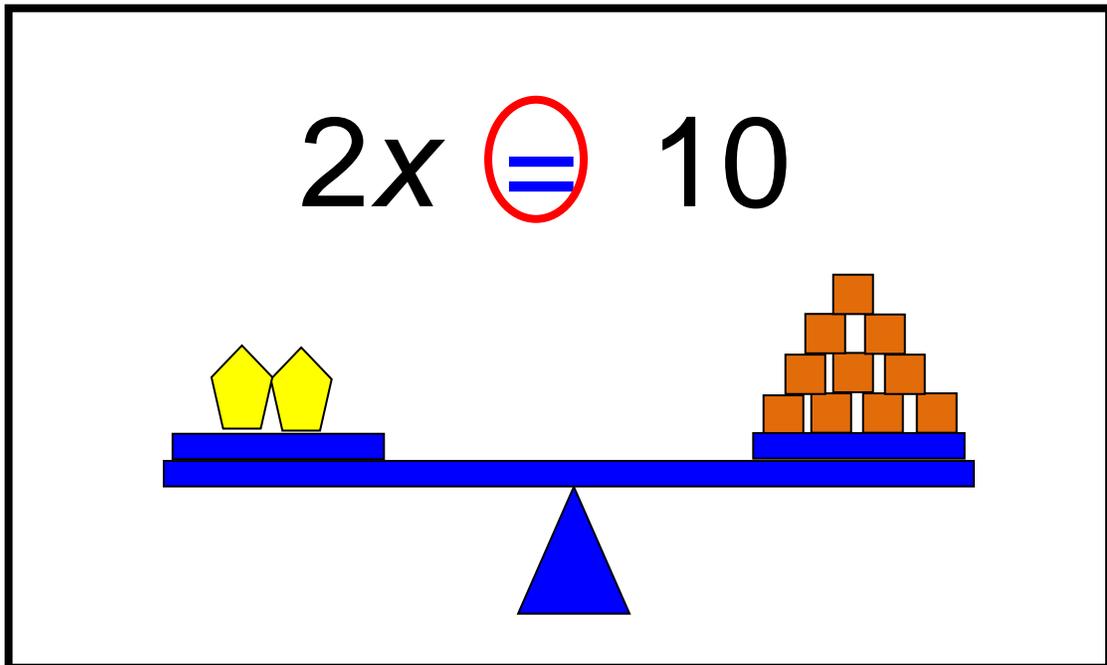
table

yellow	3	6	9	12
blue	1	2	3	4



Equation

a mathematical sentence stating that two expressions are equal



$$-38 \text{ (=) } y - (-21)$$

$$\frac{1}{3}x \text{ (=) } -16$$

Expression

a representation of quantity

16

x

$2 + 3^4$

$3(2 + 3.9) - \frac{8}{9}$

Variable

a symbol used to represent an unknown quantity

y

$$3 + x = 2.08$$

$$A = \pi r^2$$

Coefficient

the numerical factor in a term

$$(-4) = \textcircled{2}x$$

$$\textcircled{-7}y$$

$$\textcircled{\frac{1}{3}}a = -5$$

Term

a number, variable, product, or quotient in an expression of sums and/or differences

$$\underbrace{3y^2} + \underbrace{2y} - \underbrace{8}$$

3 terms

$$\underbrace{-5x} + \underbrace{(-2)}$$

2 terms

$$\underbrace{\frac{2}{3}a}$$

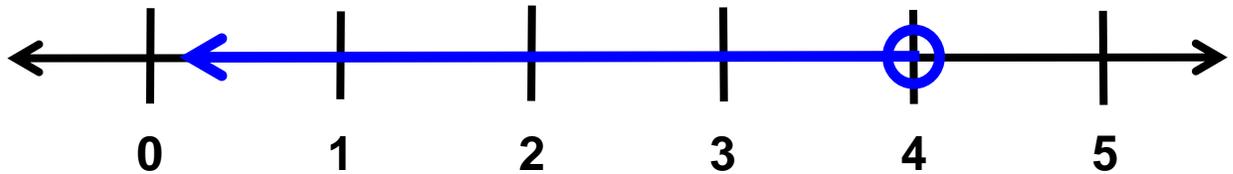
1 term

Verbal and Algebraic Expressions and Equations

Verbal	Algebraic
A number multiplied by 5	$5n$
The sum of negative two and a number	$-2 + n$
The sum of a number and two is five	$y + 2 = 5$
Negative three is one-fifth of a number	$-3 = \frac{1}{5}x$

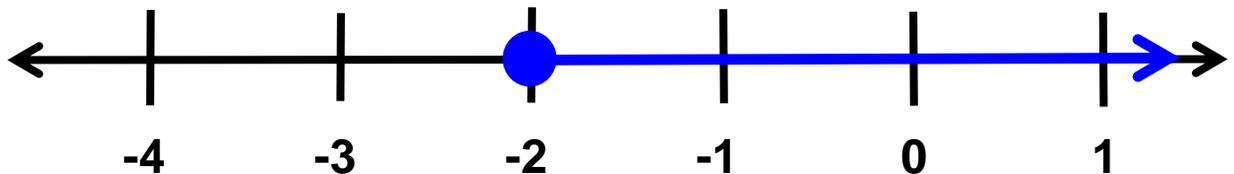
Inequality

$$y < 4 \text{ or } 4 > y$$



$$x + (-5) \geq -7$$

$$x \geq -2$$



$$-3 < a - 7$$

$$4 < a \text{ or } a > 4$$

