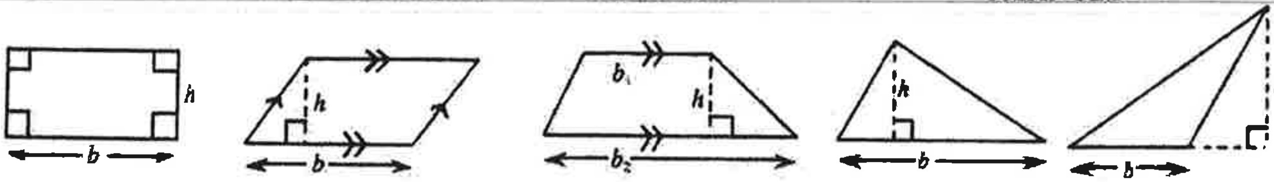
Middle School Summer Review Packet for West Bloomfield Middle School Grade 7

(students who have completed Math 7 or Compacted Math 1)

Area and Perimeter of Polygons

Area is the number of square units in a flat region. The formulas to calculate the area of several kinds of polygons are:

RECTANGLE	PARALLELOGRAM	TRAPEZOID	TRIANGLE

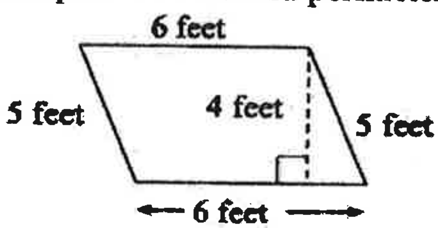


$A = bh$	$A = bh$	$A = \frac{1}{2}(b_1 + b_2)h$	$A = \frac{1}{2}bh$

Perimeter is the distance around a figure on a flat surface. To calculate the perimeter of a polygon, add together the length of each side.

Example 1:

Compute the area and perimeter.

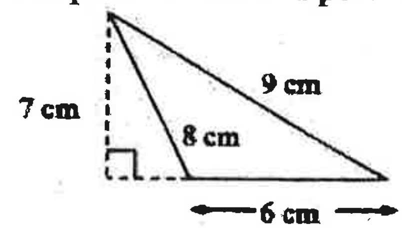


parallelogram

$A = bh = 6 \cdot 4 = 24$ feet^2
$P = 6 + 6 + 5 + 5 = 22$ feet

Example 2:

Compute the area and perimeter.

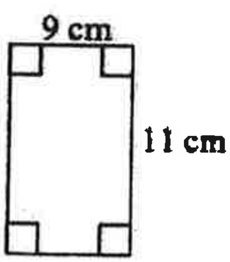


triangle

$A = \frac{1}{2} bh = 6 \cdot 7 = 21$ feet^2
$P = 6 + 8 + 9 = 23$ feet

Find the Area and Perimeter for each figure:

1.



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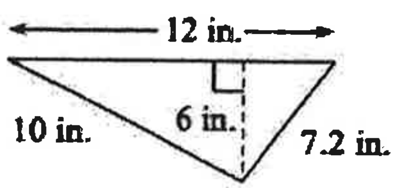

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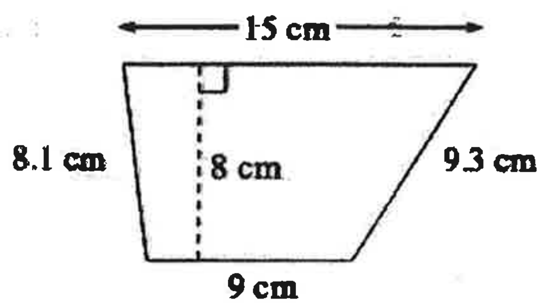

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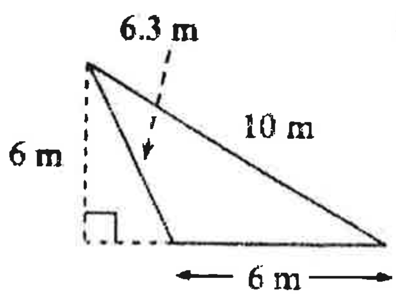

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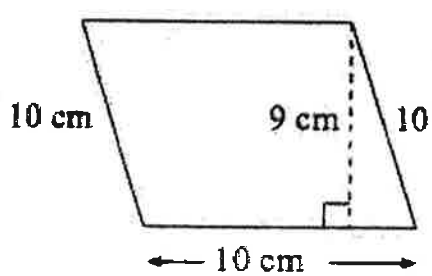

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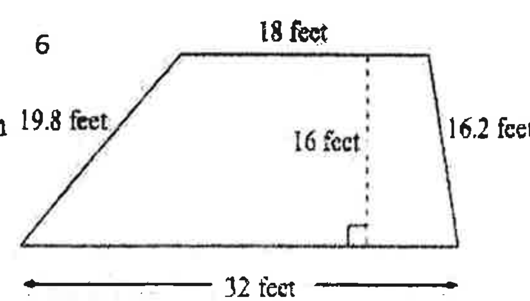
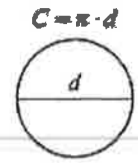


Circumference and Area of Circles



The **circumference** (C) of a circle is its perimeter, that is, the "distance around" the circle.

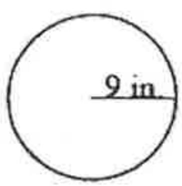
The number π (read "pi") is the ratio of the circumference of a circle to its diameter. That is $\pi = \frac{\text{circumference}}{\text{diameter}}$. This definition is also used as a way of computing the circumference of a circle if you know the diameter as in the formula $\mathbf{C = \pi\, d}$ where C is the circumference and d is the diameter. Since the diameter is twice the radius (that is, $d = 2r$) the formula for the circumference of a circle using its radius is $C = \pi(2r)$ or $C = 2\pi \cdot r$.

The first few digits of π are 3.141592.

To find the **area** (A) of a circle when given its radius (r), square the radius and multiply by π. This formula can be written as $A = r^2 \cdot \pi$. Another way the area formula is often written is $\mathbf{A = \pi\, r^2}$.

Use a calculator to find the Circumference and Area of each circle. Round to the nearest tenth.

1.



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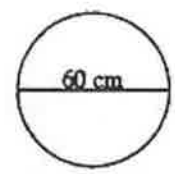

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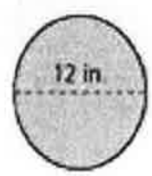

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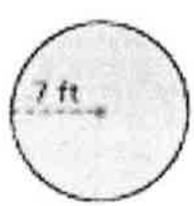

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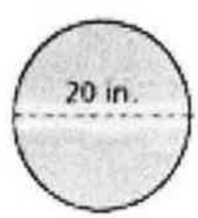
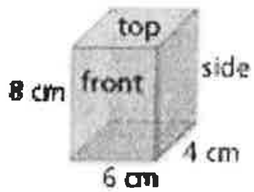


Surface Area and Volume of Rectangular Prisms

Surface Area of a Prism



Find the area of the front, top, and side, and multiply each by 2 to include the opposite faces.

Front: $6 \times 8 = 48 \rightarrow 48 \times 2 = 96$
Top: $6 \times 4 = 24 \rightarrow 24 \times 2 = 48$
Side: $4 \times 8 = 32 \rightarrow 32 \times 2 = 64$

$S = 96 + 48 + 64 = 208$ Add the areas of the faces.

The surface area is 208 cm^2.

Volume of a Prism

The **volume** of a prism can be calculated by dividing the prism into layers that are each one unit high. To calculate the total volume, multiply the volume of one layer by the number of layers it takes to fill the shape. Since the volume of one layer is the area of the base (B) multiplied by 1 (the height of that layer), you can use the formula below to compute the volume of a prism.

If h = height of the prism, V = (area of base) · (height)

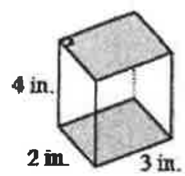
$V = Bh$

Example:

Area of base = (2 in.)(3 in.) = 6 $in.^2$

(Area of base)(height) = (6 $in.^2$)(4 in.) = 24 $in.^3$

Volume = 24 $in.^3$



Find the surface area and volume for each figure:

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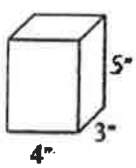

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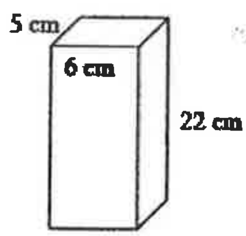

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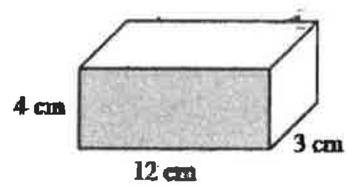

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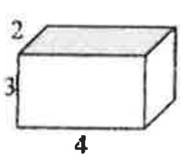

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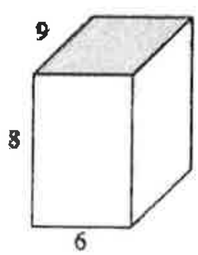

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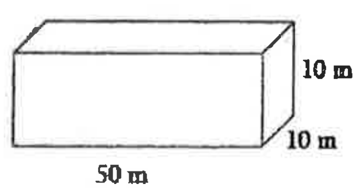
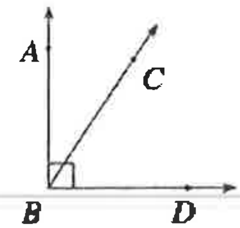
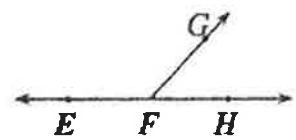


Classifying Angles



If two angles have measures that add up to 90°, they are called **complementary angles**. For example, in the diagram to the right, $\angle ABC$ and $\angle CBD$ are complementary because together they form a right angle.



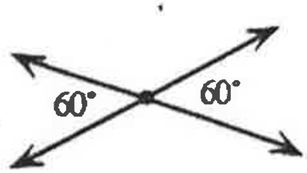
If two angles have measures that add up to 180°, they are called **supplementary angles**. For example, in the diagram at right, $\angle EFG$ and $\angle GFH$ are supplementary because together they form a straight angle.

Adjacent angles are angles that have a common vertex, share a common side, and have no interior points in common. So $\angle c$ and $\angle d$ in the diagram at right are adjacent angles, as are $\angle c$ and $\angle f$, $\angle f$ and $\angle g$, and $\angle g$ and $\angle d$.

Vertical angles are the two opposite (that is, non-adjacent) angles formed by two intersecting lines, such as angles $\angle c$ and $\angle g$ in the diagram above right. $\angle c$ itself is not a vertical angle, nor is $\angle g$, although $\angle c$ and $\angle g$ together are a pair of vertical angles. $\angle$ f and $\angle$ d are vertical angles as well. Vertical angles always have equal measure.

Use the above vocabulary terms to classify the following angle pairs.

1.



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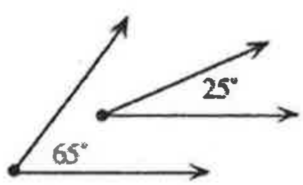

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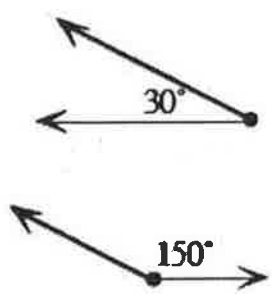

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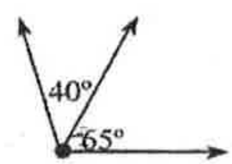
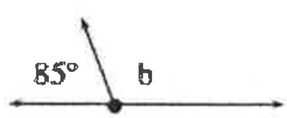


Write and solve an algebraic equation to find the missing angle measure. (Label Units.)

5.



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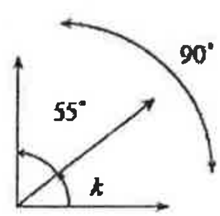


Fractions, Decimals and Percents

Example 1: Name the given portion as a fraction and as a percent: 0.3

Solution: The digit 3 is in the tenths place so 0.3 = three-tenths = $\frac{3}{10}$. On a diagram or a hundreds grid, 3 parts out of 10 is equivalent to 30 parts out of 100 so $\frac{3}{10} = \frac{30}{100} = 30\%$.

Example 2: Name the given portion as a fraction and as a decimal: 35%

Solution: 35% = $\frac{35}{100}$ = thirty-five-hundredths = 0.35; $\frac{35}{100} = \frac{7}{20}$

Example 3: Name the given portion as a decimal and percent: $\frac{1}{5}$

Solution: $\frac{1}{5} = \frac{20}{100} = 0.2 = 20\%$

Complete the table below with the appropriate fraction, decimal, or percent.

Fraction	Decimal	Percent
$\frac{3}{4}$		
		45%
$\frac{7}{8}$		
	0.8	
		98%

Multiplying Fractions and Decimals

To multiply fractions, multiply the numerators and then multiply the denominators. To multiply mixed numbers, change each mixed number to a fraction greater than one before multiplying. In both cases, simplify by looking for factors than make "one."

To multiply decimals, multiply as with whole numbers. In the product, the number of decimal places is equal to the total number of decimal places in the multiplied numbers. Sometimes zeros need to be added to place the decimal point.

Example 1: Multiply $\frac{3}{8}\cdot\frac{4}{5}$

Solution:

$\frac{3}{8}\cdot\frac{4}{5}\Rightarrow\frac{3\cdot4}{8\cdot5}\Rightarrow\frac{3\cdot\cancel{4}}{2\cdot\cancel{4}\cdot5}\Rightarrow\frac{3}{10}$

Example 2: Multiply $3\frac{1}{3}\cdot2\frac{1}{2}$

Solution:

$3\frac{1}{3}\cdot2\frac{1}{2}\Rightarrow\frac{10}{3}\cdot\frac{5}{2}\Rightarrow\frac{10\cdot5}{3\cdot2}\Rightarrow\frac{5\cdot\cancel{2}\cdot5}{3\cdot\cancel{2}}\Rightarrow\frac{25}{3}$ or $8\frac{1}{3}$

Note that we are simplifying using Giant Ones but no longer drawing the Giant One.

Example 3: Multiply 12.5 · 0.36

Solution:

```
  12.5   (one decimal place)
 x0.36   (two decimal places)
   750
  3750
 4.500   (three decimal places)
```

1. $\frac{7}{15}\bullet\frac{5}{14}$

2. $32\bullet\frac{3}{8}$

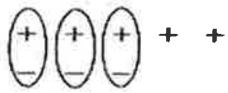
3. $2\frac{2}{5}\bullet4\frac{1}{6}$

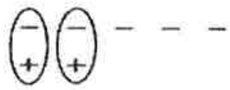
4. $3.1\bullet0.28$

5. $0.15\bullet0.82$

6. $8.2\bullet2.9$

Operation with Integers

Example 1: $5 + (-3)$  $5 + (-3) = 2$

Example 2: $-5 + (2)$  $-5 + (2) = -3$

Example 3: $-6 + (-2)$  $-6 + (-2) = -8$

A method for subtracting integers is to notice the relationship between addition problems and subtraction problems, as shown below:

$-3 - (-2) = -1$	and	$-3 + 2 = -1$
$-5 - (2) = -7$	and	$-5 + (-2) = -7$
$3 - (-3) = 6$	and	$3 + 3 = 6$
$2 - (-8) = 10$	and	$2 + 8 = 10$

When multiplying or dividing integers: if both integers are negative the answer will be positive. If one integer is negative, the answer is negative. Unlike adding, it doesn't matter which integer has a greater absolute value.

Examples: $(4)(-2) = -8$ $(-4)(2) = -8$ $(-4)(-2) = 8$ $\frac{4}{-2} = -2$ $\frac{-4}{2} = -2$ $\frac{-4}{-2} = 2$

1. $7 + (-2)$

2. $-7 + 2$

3. $-7 + (-2)$

4. $7 - (-2)$

5. $-7 - (-2)$

6. $-7 - 2$

7. $2 - 7$

8. $2 - (-7)$

9. $-5 \bullet 10$

10. $-5 \bullet -10$

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

12. $\frac{-10}{-5}$

Order of Operations (PEMDAS)

1. Perform operations in PARENTHESIS.
2. Find the values of numbers with EXPONENTS.
3. MULTIPLY or DIVIDE from left to right!
4. ADD or SUBTRACT from left to right!

$$8 \div (1 + 3) \times 5^2 - 2$$
$$8 \div (1 + 3) \times 5^2 - 2$$
$$8 \div 4 \times 5^2 - 2$$
$$8 \div 4 \times 25 - 2$$
$$2 \times 25 - 2$$
$$50 - 2$$
$$48$$

Evaluate each expression.

1. $36 - 18 \div 6$

2. $7 + 24 \div 6 \bullet 2$

3. $62 - 4 \bullet (15 \div 5)$

4. $11 + 2^3 \bullet 5$

5. $5 \bullet (28 \div 7) - 4^2$

6. $5 + 3^2 \bullet 6 - (10 - 9)$

7. $45 \div (3 + 6) \bullet 3$

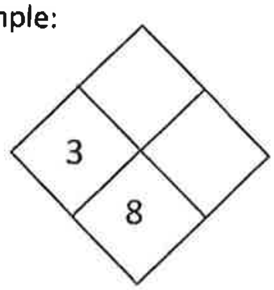
8. $9 \div 3 + 6 \bullet 2$

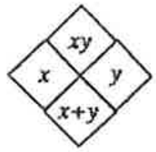
9. $100 \div 5^2 + 7 \bullet 3$

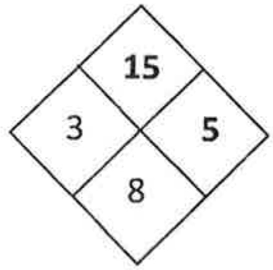
Diamond Problems

The pattern used in the Diamond Problems is shown below.

Example:







Complete each of the Diamond Problems below.

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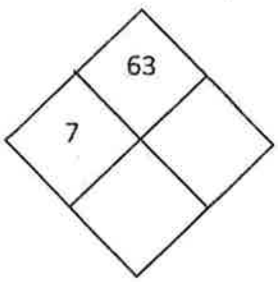

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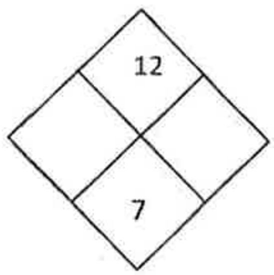

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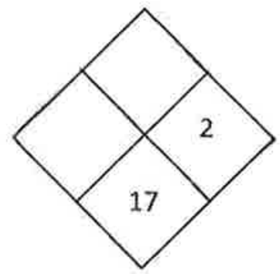

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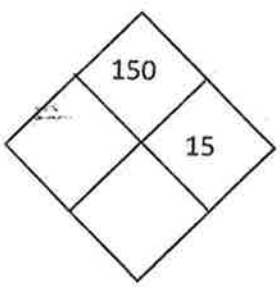

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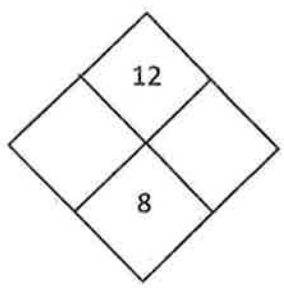

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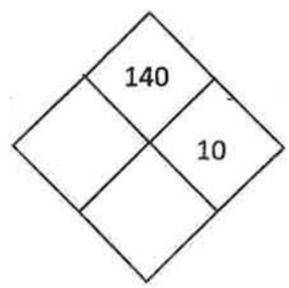

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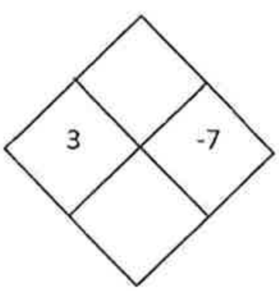

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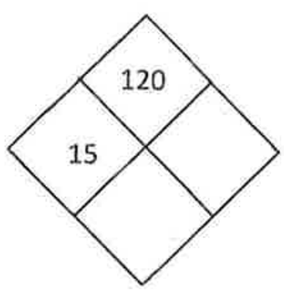

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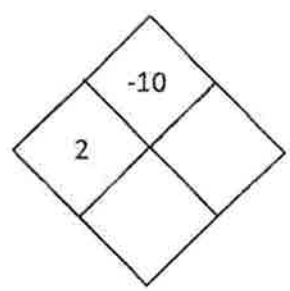


Evaluating Algebraic Expressions

To evaluate an algebraic expression means to calculate the value of the expression when the variable is replaced by a numerical value.

Examples:

Evaluate $2x-5$ if $x=7$

Solution: $2x-5 \Rightarrow 2 \cdot 7-5=14-5=9$

Evaluate $\frac{6}{x}+9$ if $x=2$

Solution: $\frac{6}{x}+9 \Rightarrow \frac{6}{2}+9=3+9=12$

1. $4x-3$ if $x=5$

2. $7d$ if $d=10$

3. $2xy+1$ if $x=3,\ y=4$

4. $4+8g$ if $g=6$

5. $4b+12$ if $b=11$

6. $\frac{9g}{27}$ if $g=3$

7. $mw+h$ if $m=5,\ w=8,\ h=6$

8. $\frac{y}{z}+7$ if $y=4,\ z=2$

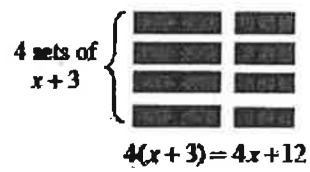
Distributive Property

The **Distributive Property** states that multiplication can be "distributed" as a multiplier of each term in a sum or difference. It is a method to separate or group quantities in multiplication problems. For example, $3(2 + 4) = 3 \cdot 2 + 3 \cdot 4$.

The collection of tiles at right can be represented as 4 sets of $x + 3$, written as $4(x + 3)$.

It can also be represented by 4 x-tiles and 12 unit tiles, written as $4x + 12$.

Therefore: $4(x + 3) = 4 \bullet x + 4 \bullet 3 = 4x + 12$



Use the distributive property to rewrite each expression below.

Example: $6(x + 3) = 6x + 18$

Example: $6x + 18 = 6(x + 3)$

1. $3(5x - 5)$

2. $7(x + 4)$

3. $9(2x + 4)$

4. $4(x - 5)$

5. $15x - 45$

6. $4x + 16$

7. $7x + 35$

8. $14x + 6$

Simplifying Expressions (Combining Like-Terms)

Combining like terms is a way of simplifying an expression.

Like terms contain the same variable raised to the same power.

Like terms can be combined into one quantity by adding and/or subtracting the coefficients of the terms. Terms are usually listed in the order of decreasing powers of the variable.

Examples: $5y^2 - 2y^2 + 4y = 3y^2 + 4y$ $\quad$ $6h + h - 9 = 7h - 9$

1. $6x - 10x$

5. $4x - 6x + 3x^2 + 4 - 5$

2. $8n - 6 + 5 + n$

6. $x + 7x + 9$

3. $-2v + 5 - 3$

7. $7a + 4b + 7a + 4b$

4. $1 - 3m + 4m$

8. $5x^3 + 3y + 7x^3 - 2y - 4x$

One Step Equations

Use "inverse operations" to isolate a variable.

Examples: $x - 8 = 17$

$$x - 8 = 17$$
$$\underline{+8 \quad +8}$$
$$x \qquad = 25$$

$\frac{x}{7} = 8$

$$7 \bullet \frac{x}{7} = 8 \bullet 7$$
$$x = 56$$

$24 = 4z$

$$\frac{24}{4} = \frac{4z}{4}$$
$$6 = z$$

1. $d - 8 = 6$
2. $j + 23 = -3$
3. $-13 + p = 8$
4. $-21 = m - 4$
5. $\frac{n}{8} = 2$
6. $\frac{b}{25} = 4$
7. $-5 = \frac{y}{2}$
8. $9 = \frac{z}{5}$
9. $-7y = 56$
10. $-8a = -88$
11. $6u = 222$
12. $240 = 12f$

Two Step Equations

You can solve two-step equations by undoing one operation at a time. **First**, undo any addition or subtraction, **then** undo any multiplication or division.

Examples:

$4y + 8 = 56$

$$\begin{array}{rcl} 4y + 8 &=& 56 \\ \mathbf{-8} && \mathbf{-8} \\ \hline 4y &=& 48 \end{array}$$

$$\frac{4y}{4} = \frac{48}{4}$$

$y = 12$

$\frac{n}{6} - 8 = 4$

$$\begin{array}{rcl} \frac{n}{6} - 8 &=& 4 \\ \mathbf{+8} && \mathbf{+8} \\ \hline \frac{n}{6} &=& 12 \end{array}$$

$$\mathbf{6} \bullet \frac{n}{6} = 12 \bullet \mathbf{6}$$

$n = 72$

1. $7x + 8 = 36$

2. $-3y - 7 = 2$

3. $4a - 13 = 19$

4. $\frac{v}{4} - 3 = 5$

5. $5x + 6 = 41$

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

Unit Rates

A **Unit Rate** is a rate whose denominator is 1.

Example: During exercise, Sonia's heart beats 675 times in 5 minutes. How many times does it beat per minute?

$$\frac{675\ beats}{5\ minutes} \qquad \frac{675\ beats}{5\ minutes}\frac{\div 5}{\div 5} = \frac{135\ beats}{1\ minute}$$ or 135 beats/min or 135 bpm

1. \$116.25 for 15 hours

2. 52 songs on 4 CDs

3. \$12.96 for 6 pounds

Using Cross Products to Solve Proportions

Find the missing value in the proportion $\frac{3}{4} = \frac{n}{16}$.

$\frac{3}{4} = \frac{n}{16}$ *Find the cross products.*

$4 \cdot n = 3 \cdot 16$ *The cross products are equal.*

$4n = 48$ *n is multiplied by 4.*

$\frac{4n}{4} = \frac{48}{4}$ *Divide both sides by 4 to undo the multiplication.*

$n = 12$

4. $\frac{2}{10} = \frac{x}{35}$

5. $\frac{2}{7} = \frac{6}{d}$

6. $\frac{21}{k} = \frac{7}{4}$

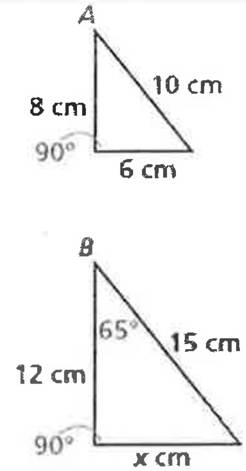
7. $\frac{10}{h} = \frac{5}{6}$

8. $\frac{w}{42} = \frac{6}{7}$

9. $\frac{8}{9} = \frac{40}{m}$

Missing Measures in Similar Figures

The two triangles are similar. Find the missing length x and the measure of $\angle A$.



$\frac{8}{12} = \frac{6}{x}$ *Write a proportion using corresponding side lengths.*

$12 \cdot 6 = 8 \cdot x$ *The cross products are equal.*

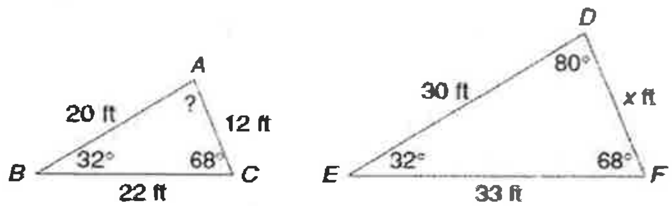
$72 = 8x$ *x is multiplied by 8.*

$\frac{72}{8} = \frac{8x}{8}$ *Divide both sides by 8 to undo the multiplication.*

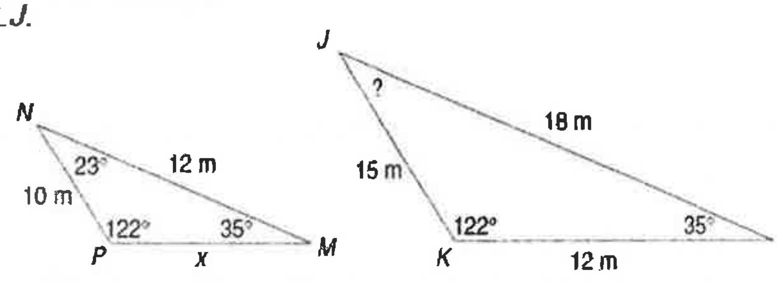
$9 \text{ cm} = x$

Angle A corresponds to angle B, and the measure of $\angle B = 65°$. The measure of $\angle A = 65°$.

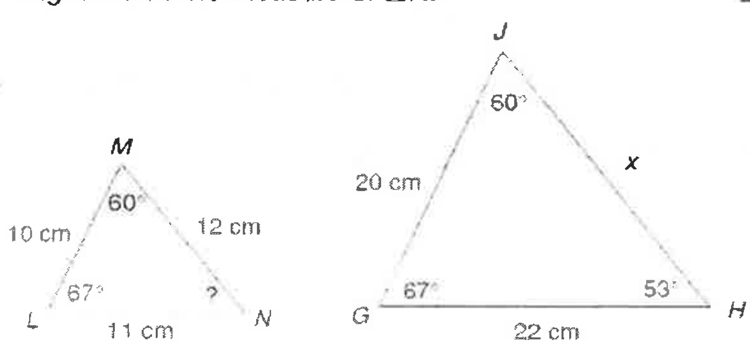
1. The two triangles are similar. Find the missing length x and the measure of $\angle A$.



2. The two triangles are similar. Find the missing length x and the measure of $\angle J$.



3. The two triangles are similar. Find the missing length x and the measure of $\angle N$.



Probability

Experimental Probability: The probability based on data collected in experiments.

$$\text{Experimental Probability} = \frac{\text{number of successful outcomes in the experiment}}{\text{total number of outcomes in the experiment}}$$

Theoretical Probability is a calculated probability based on the possible outcomes when they all have the same chance of occurring.

$$\text{Theoretical Probability} = \frac{\text{number of successful outcomes (events)}}{\text{total number of possible outcomes}}$$

Example: If Tom rolls a number cub six times, theoretically Tom should roll a 2 one time.

$$P(2) = \frac{\text{number of ways to roll 2}}{\text{number of possible outcomes}} = \frac{1}{6} \text{ or } 0.1\overline{6} \text{ or approximately } 16.7\%.$$

The probabilities of combinations of simple events are called **compound events.**

To find the probability of *either* one event *or* another event that has nothing in common with the first, you can find the probability of each event separately and then **add** their probabilities. Using the example above of drawing a king or a queen from a deck of cards:

$$P(\text{king}) = \frac{4}{52} \text{ and } P(\text{queen}) = \frac{4}{52} \text{ so } P(\text{king or queen}) = \frac{4}{52} + \frac{4}{52} = \frac{8}{52} = \frac{2}{13}$$

For two independent events, to find the probability of *both* one *and* the other event occurring, you can find the probability of each event separately and then **multiply** their probabilities. Using the example of rolling a one followed by a six on a number cube:

$$P(1) = \frac{1}{6} \text{ and } P(6) = \frac{1}{6} \text{ so } P(1 \text{ then } 6) = \frac{1}{6} \cdot \frac{1}{6} = \frac{1}{36}$$

1. If Tom flipped a coin 10 times and got 4 heads, what is the experimental probability?

2. What is the theoretical probability of getting heads out of 10 flips?

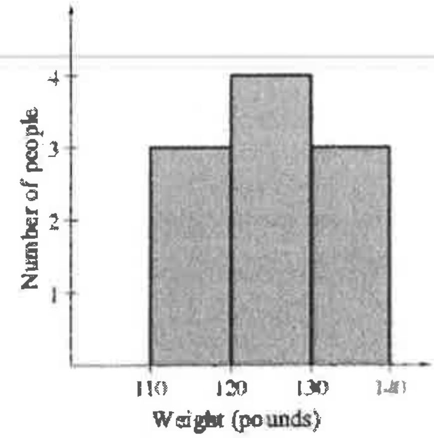
3. If Tom is rolling 1 number cube, what is the probability that he will roll an even number **or** a 3?

4. If Tom is rolling 2 number cubes, what is the probability that he will roll an even number **and** a 3?

Displays of Data

Histograms

A histogram is a method of showing data. It uses a bar to show the frequency (the number of times something occurs). The frequency measures something that changes numerically. (In a bar graph the frequency measures something that changes by category.) The intervals (called bins) for the data are shown on the horizontal axis and the frequency is represented by the height of a rectangle above the interval. The labels on the horizontal axis represent the lower end of each interval or bin.



Example: Sam and her friends weighed themselves and here is their weight in pounds: 110, 120, 131, 112, 125, 135, 118, 127, 135, and 125. Make a histogram to display the information. Use intervals of 10 pounds.

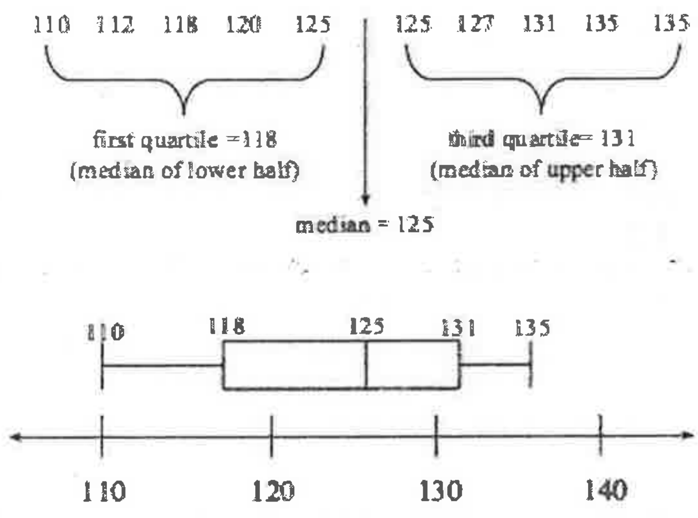
Solution: See histogram at right. Note that the person weighing 120 pounds is counted in the next higher bin. Also note that the bars a touching and do not touch the y-axis since the first interval does not start with zero.

Box Plots

A box plot displays a summary of data using the median, quartiles, and extremes of the data. The box contains the "middle half" of the data. The right segment represents the top 25% of the data and the left segment represent the bottom 25% of the data.

Example: Create a box plot for the set of data given in the previous example.

Solution:
Place the data in order to find the median (middle number) and the quartiles (middle numbers of the upper half and the lower half.)
Based on the extremes, first quartile, third quartile, and median, the box plot is drawn. The interquartile range IQR = 131 − 118 = 13.



Tom went to Colorado for 10 days over winter break. The temperatures in degrees Fahrenheit were: 12, 18, 12, 22, 28, 23, 32, 10, 29, and 36.

1. Make a histogram using the data. Use an interval of 10. The first interval should be 10-19. How many days were below 30 degrees?
2. Make a box plot of the data. 75% of the days were above what temperature?

ANSWER KEY

Area and Perimeter of Polygons

1. $A = 99\ cm^2$, $P = 40\ cm$
2. $A = 36\ in.^2$, $P = 29.2\ in$
3. $A = 96\ cm^2$, $P = 41.4\ cm$
4. $A = 18\ m^2$, $P = 22.3\ m$
5. $A = 90\ cm^2$, $P = 40\ cm$
6. $A = 400\ feet^2$, $P = 86\ feet$

Area and Circumference of Circles (If you used 3.14 instead of the pi button, your answers might be smaller.)

1. $C = 56.5$ in, $A = 254.5\ in^2$
2. $C = 188.5$ cm, $A = 2827.4\ cm^2$
3. $C = 25.1$ ft, $A = 50.3\ ft^2$
4. $C =$ 37.7in, $A = 113.1\ in^2$
5. $C = 44$ ft, $A = 153.9\ ft^2$
6. $C = 62.8$ in, $A = 314.2\ in^2$

Surface Area and Volume of Rectangular Prisms

1. $SA = 94in^2$, $V = 60in^3$
2. $SA = 544cm^2$, $V = 660cm^3$
3. $SA = 192cm^2$, $V = 144cm^3$
4. $SA = 52units^2$, $V = 24units^3$
5. $SA = 348units^2$, $V = 432units^3$
6. $SA = 2200m^2$, $V = 5000m^3$

Classifying Angles

1. Vertical
2. Complementary
3. Supplementary
4. Adjacent
5. $85 + b = 180$; $b = 95°$
6. $55 + k = 90$; $k = 35°$

Fractions, Decimals and Percents

Fraction	Decimal	Percent
$\frac{3}{4} = \frac{75}{100}$	0.75	75%
$\frac{45}{100} = \frac{9}{20}$	0.45	45%
$\frac{7}{8} = \frac{875}{1000}$	0.875	87.5%
$\frac{8}{10} = \frac{4}{5}$	0.8	80%
$\frac{98}{100} = \frac{49}{50}$	0.98	98%

Multiplying Fractions and Decimals

1. $\frac{1}{6}$
2. 12
3. 10
4. 0.868

5. 0.123

6. 23.78

8. 15

9. 25

Operations with Integers

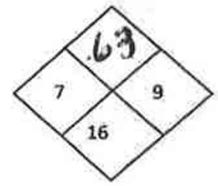
1. 5
2. -5
3. -9
4. 9
5. -5
6. -9
7. -5
8. 9
9. -50
10. 50
11. -2
12. 2

Order of Operations

1. 33
2. 15
3. 50
4. 51
5. 4
6. 58
7. 15

Diamond Problems

1.



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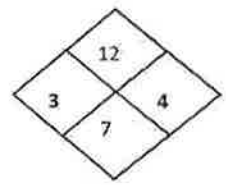

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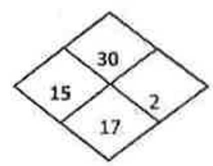

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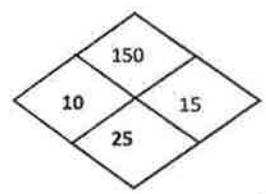

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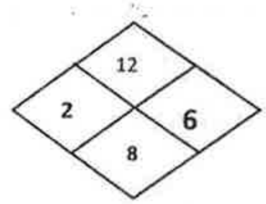

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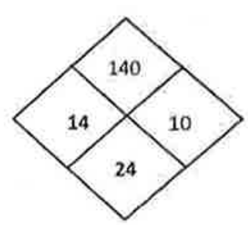

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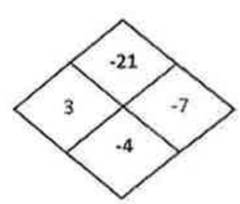

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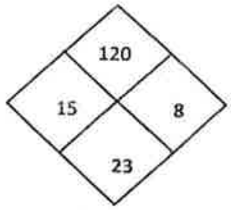

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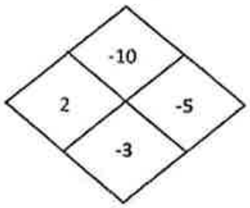


Evaluating Algebraic Expressions

1. 17
2. 70
3. 25
4. 52
5. 56
6. 1
7. 46
8. 9

Distributive Property

1. 15x – 15
2. 7x + 28
3. 18x + 36
4. 4x – 20
5. 15(x – 3)
6. 4(x + 4)
7. 7(x + 5)
8. 2(7x + 3)

Simplifying Expressions (Combining Like-Terms)

1. -4x
2. 9n – 1
3. -2v +2
4. 1 + m
5. $3x^2 - 2x - 1$
6. 8x + 9
7. 14a + 8b
8. $12x^3 + y - 11x$

One Step Equations

1. d = 14
2. j = -26
3. p = 21
4. m = -17
5. n = 16
6. b = 100
7. -10 = y
8. 45 = z
9. y = -8
10. a = 11

11. u = 37

12. 20 = f

Two Step Equations

1. x = 4
2. y = -3
3. a = 8
4. v = 32
5. x = 7
6. v = -10

Using Cross Products to Solve Proportions and Unit Rates

1. \$7.75 per hour
2. 13 songs per CD
3. \$2.16 per lb
4. x = 7
5. d = 21
6. k = 12
7. h = 12
8. w = 36
9. m = 45

Missing Measures in Similar Figures

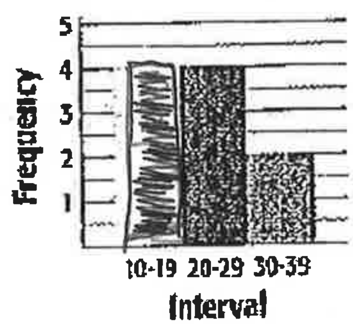
1. $m\angle A = 80^\circ$, x = 18ft
2. $m\angle J = 23^\circ$, x = 8m
3. $m\angle N = 53^\circ$, x = 24cm

Probability

1. P(heads) $= \frac{4}{10} = \frac{2}{5}$
2. P(heads) $= \frac{5}{10} = \frac{1}{2}$
3. P(even or 3) $= \frac{3}{6} + \frac{1}{6} = \frac{4}{6} = \frac{2}{3}$
4. P(even and 3) $= \frac{3}{6} \bullet \frac{1}{6} = \frac{3}{36} = \frac{1}{12}$

Displays of Data

1. 8 days



2. 12°F