

Computation Review

Solve the problems. Show all work.

1) $-41 - 37 =$	2) $62 - (-29) =$	3) $0.0589 + 0.278 =$
4) $240 \div (-4) =$	5) $117 + (-105.0023) =$	6) $149.73 \div 0.23 =$
7) $-12 \times 3.05 =$	8) $3 \frac{6}{7} + 4 \frac{1}{8} =$	9) $4 \frac{3}{5} - 2 \frac{2}{3} =$
10) $\frac{3}{10} \times \frac{2}{3} =$	11) $18.3 \times 0.67 =$	12) $11 \frac{3}{4} \div 5 \frac{3}{4} =$

Order of Operations

Solve the problems following order of operations. Show all work.

1) $-12 + 15 + (-30) + 17 =$	2) $(-49 \div 7) \times 8 =$
3) $72 + 5 \cdot 3^2 - 1^5 =$	4) $12^2 + 4(23) - 11(-2) =$
5) $88 \div 11 + 56 \div 8 + 12 - 5 =$ _____	6) $5(8) - \frac{30}{5} + 4 \times 3 =$ _____
7) $(7)(9) + \frac{9}{3} - 20 \cdot 3 =$ _____	8) $9 + \frac{44}{4} - 8 \cdot 2 + 20 - 3 =$ _____

Writing Expressions and Equations

Write an expression or equation for each phrase.

1) 12 more than a number	2) The quotient of a number divided by 9
3) 15 less than a number	4) The product of 4 times a number minus 8
5) A number plus 14 equals 25	6) The product of 5 and y added to 3 is 33
7) A number less 5 is greater than 7	8) The sum of a number and 8 is less than 12
9) The quotient of a number and 4 is greater than or equal to 15	10) The product of a number and 5 is less than or equal to -2.
11) 5 is not more than x	12) The sum of y and five equals three times y
7) 3 more than 5 times the number of dogs is 18 dogs	8) Seven more than four times a number is less than six.
9) Four times the difference of a number and five is greater than nine	10) The sum of two times a number and eight is not greater than five.

Solving Equations and Inequalities

Solve the following problems. Show all your work step-by-step.

1) $12x + 3 = 51$	2) $-17x = -204$
3) $-7x - 3x + 2 = -8x - 8$	4) $-3(-4 - b) = 5 - \frac{8b}{4}$
5) $-3x - 22 > 23$	6) $7(5a - 4) - 1 = 14 - 8a$
7) $4 + \frac{n}{3} > -6$	8) $-5x + 4 < -36$
9) $5x + 14 \geq 54$	10) $-3(p + 1) \leq -18$

Unit: Knowledge of Algebra, Patterns, and Functions

Objective: Identify Equivalent Equations

Which equation is equivalent to $3x + 2 = 8$? A) $x + 4x = 5$ B) $x + 2 = 6$ C) $6x + 5 = 11$ D) $4x - 3 = 5$	
STRATEGY: Solve the given equation and each of the equation choices and compare the solutions.	
Step 1: Solve the given equation. $3x + 2 = 8$ $3x = 6$ $x = 2$	Step 2: Solve choice A. $x + 4x = 5$ $5x = 5$ $x = 1$
Step 3: Solve choice B. $x + 2 = 6$ $x = 4$	Step 4: Solve choice C. $6x + 5 = 11$ $6x = 6$ $x = 1$
Step 5: Solve choice D. $4x - 3 = 5$ $4x = 8$ $x = 2$	SOLUTION: The equation that is equivalent to $3x + 2 = 8$ is Choice D.

Solve the following problems. Show your work. Circle your answer.

1) Which of the following equations is equivalent to $30 = 5d + 6 - 2d$? A. $30 = 7d + 6$ B. $10 + 20 = 3d - 6$ C. $35 + 5 = 3d + 6$	2) Which of the following equations is equivalent to $6 = 2x + 5$? A. $4x - 6 = 6x + 5$ B. $8x = 6x + 5$ C. $8x + 12 = 12x + 10$
3) Which of the following equations is not equivalent to $8x + 5x - 5 = 12 + 9$? A. $x = 2$ C. $13x - 5 = 21$ B. $13x = 26$ D. $13x = 21$	4) Are the two equations given equivalent? A. Yes B. No $50 = 6 + -11c$ $6c - 14 + 5c + 8 = -50$

Unit: Knowledge of Geometry

Objective: Identify and describe relationships between angles formed when parallel lines are cut by a transversal.

EXAMPLES:

Interior Angles – lie inside the parallel lines
Angles 3, 4, 5, 6 are INTERIOR angles

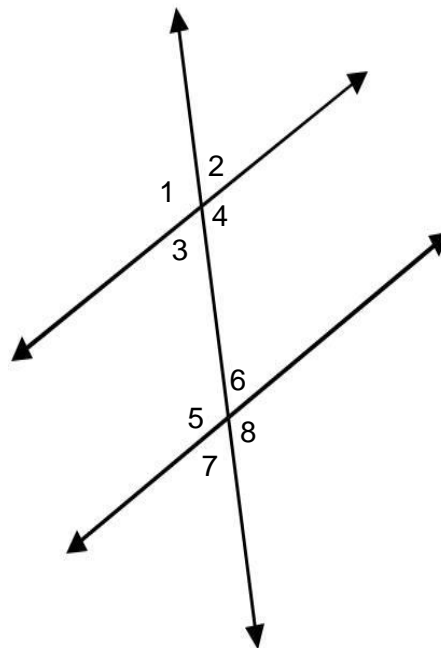
Exterior Angles – lie outside the parallel lines
Angles 1, 2, 7, 8 are EXTERIOR angles

Vertical Angles – angles opposite one another;
Vertical angles are EQUAL
Angles 1 & 4, 2 & 3, 5 & 8, 6 & 7 are Vertical Angles.

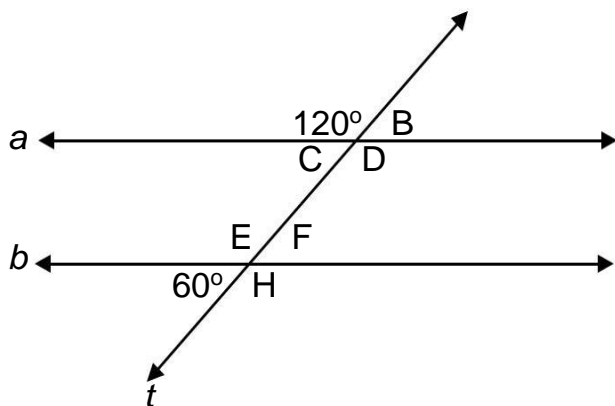
Alternate Interior Angles – on opposite sides of the transversal and inside the parallel lines; Alternate Interior Angles are EQUAL.
Angles 3 & 6, 4 & 5 are Alternate Interior angles

Alternate Exterior Angles – on opposite sides of the transversal and outside the parallel lines; Alternate Exterior Angles are EQUAL.
Angles 1 & 8, 2 & 7 are Alternate Exterior angles

Corresponding Angles – in the same position on the parallel lines in relation to the transversal; Corresponding Angles are EQUAL.
Angles 1 & 5, 2 & 6, 3 & 7, 4 & 8 are Corresponding Angles



Use the diagram below to answer the questions.

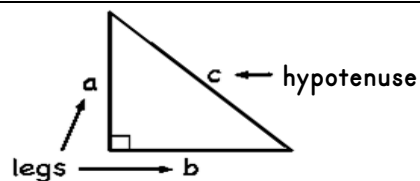


- 1) What is the relationship between line a and line b? _____
- 2) Which line is the transversal? _____
- 3) What is the measure of angle H? _____ How do you know? _____
- 4) Identify 2 Exterior Angles. _____
- 5) What is the measure of angle C? _____ How do you know? _____
- 6) Identify 2 Interior Angles. _____

Unit: Knowledge of Geometry
Objective: Use the Pythagorean Theorem

EXAMPLES:

- If a triangle is a RIGHT triangle, then the square of the length of the hypotenuse is equal to the sum of the squares of the lengths of the legs.



- $a^2 + b^2 = c^2$

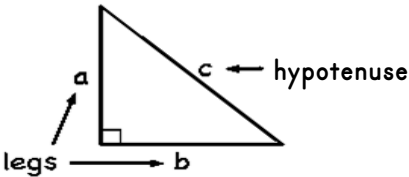
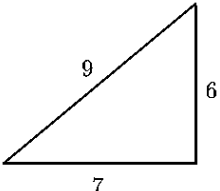
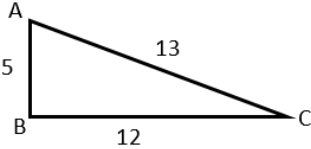
	$a^2 + b^2 = c^2$ $8^2 + 15^2 = c^2$ $64 + 225 = c^2$ $289 = c^2$ $\sqrt{289} = \sqrt{c^2}$ $17 = c$		$a^2 + b^2 = c^2$ $5^2 + b^2 = 13^2$ $25 + b^2 = 169$ $b^2 = 169 - 25$ $b^2 = 144$ $\sqrt{b^2} = \sqrt{144}$ $b = 12$
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Solve the following problems. Show all your work. Be sure to include the correct unit.

<p>1) Determine the length of the missing side.</p>	<p>2) Determine the length of the missing side. Round to the nearest tenth if necessary.</p>
<p>3) Kristen is flying a kite. The length of the kite string is 55 feet and she is positioned 33 feet away from beneath the kite. About how high is the kite? A. 47 ft. B. 45 ft. C. 44 ft. D. 40 ft. (Hint: You may want to draw a picture to help you)</p>	<p>4) Brandon rides his bike 9 miles south and 12 miles west. How far is he from the starting point of his bike ride, if he takes a straight path? (Hint: You may want to draw a picture to help you)</p>

Unit: Knowledge of Geometry

Objective: Determine whether 3 given side lengths form a right triangle

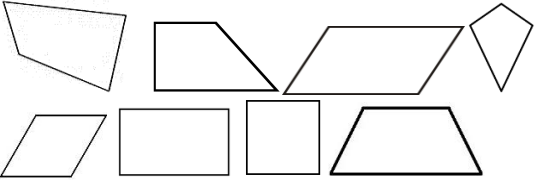
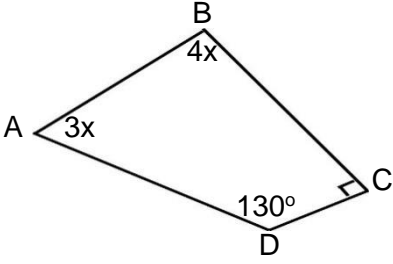
EXAMPLES:	
<ul style="list-style-type: none"> If a triangle is a RIGHT triangle, then the square of the length of the hypotenuse is equal to the sum of the squares of the lengths of the legs. $a^2 + b^2 = c^2$ 	
 <div style="margin-left: 200px;"> $a^2 + b^2 = c^2$ $6^2 + 7^2 = 9^2$ $36 + 49 = 81$ $85 = 81$ </div> <p style="text-align: center;">No, this is not a right triangle.</p>	 <div style="margin-left: 200px;"> $a^2 + b^2 = c^2$ $5^2 + 12^2 = 13^2$ $25 + 144 = 169$ $169 = 169$ </div> <p style="text-align: center;">Yes, this is a right triangle.</p>

Solve the following problems. Show all your work. Circle the correct answer.

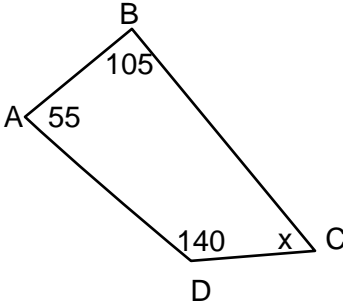
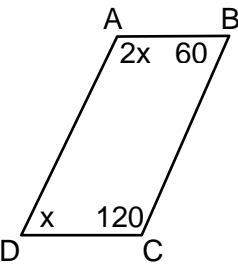
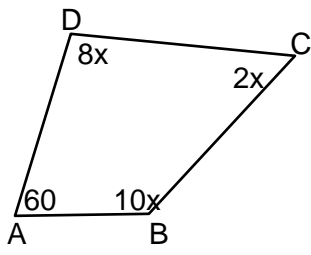
<p>1) The lengths of three sides of a triangle are: $a = 5$, $b = 8$, $c = 9$. Is this a right triangle?</p> <p style="text-align: center;">A. Yes B. No</p>	<p>2) The lengths of three sides of a triangle are: $a = 24$, $b = 28$, $c = 32$. Is this a right triangle?</p> <p style="text-align: center;">A. Yes B. No</p>
<p>3) The lengths of three sides of a triangle are: $a = 16$, $b = 30$, $c = 34$. Is this a right triangle?</p> <p style="text-align: center;">A. Yes B. No</p>	<p>4) The size of a television set is determined by the length of the diagonal of the screen. If the screen is 27 inches long, 36 high and the diagonal is 45 inches, is this a true measurement for the television set?</p> <p style="text-align: center;">A. Yes B. No</p>

Unit: Knowledge of Geometry

Objective: Apply knowledge of quadrilateral properties.

EXAMPLES:	
<p>Quadrilateral</p> <ul style="list-style-type: none"> closed figure with 4 sides and 4 vertices can be separated into 2 triangles includes parallelograms, rectangle, square, rhombus, trapezoid sum of the measures of the interior angles is 360o 	
<p>Look at the quadrilateral and determine the measure of each angle.</p> $A + B + C + D = 360^\circ$ $3x + 4x + 90 + 130 = 360$ $7x + 220 = 360$ $7x = 140$ $x = 20$	<div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> $\angle A = 3x = 3(20) = 60^\circ$ $\angle B = 4x = 4(20) = 80^\circ$ $\angle C = 90^\circ$ $\angle D = 130^\circ$ </div>  </div>

Answer/solve the following problems. Show all your work. ****Note: All figures are NOT drawn to scale.**

<p>1) Tell whether each statement is sometimes, always, or never true.</p> <p>A rhombus is a square. _____</p> <p>A square is a parallelogram. _____</p> <p>A parallelogram is a square. _____</p> <p>A parallelogram is a trapezoid. _____</p> <p>A square is a quadrilateral. _____</p>	<p>2) Determine the measure of the missing angles.</p> 
<p>3) Determine the measure of the missing angles.</p> 	<p>4) Determine the measure of the missing angles.</p> 

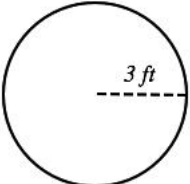
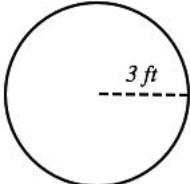
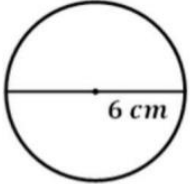
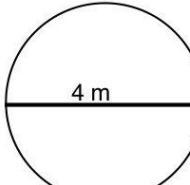
Unit: Knowledge of Measurement

Objective: Estimate and determine the circumference or area of a circle



- **circumference: C**, the distance around the outside (perimeter) of a circle
- **radius: r**, the distance from its center to any point on its outer edge
- **diameter: d**, the length of a straight line through the circle's center that touches any two points on the outer edge
- A circle's radius is always exactly half its diameter. $r = d \div 2$
- The diameter is always 2 times the radius. $d = 2 \times r$
- The value of pi (π) is 3.14
- Formulas for circumference: $C \approx 2 \pi r$ or $C \approx \pi d$
- Formula for area: $A = \pi r^2$

Solve each problem. Show all your work (write the formula, substitute numbers and calculate). Make sure you include the correct units in your answer.

<p>1) Find the circumference.</p> 	<p>2) Find the area.</p> 	<p>3) Find the circumference.</p> 
<p>4) Find the area.</p> 	<p>5) You are making a pie for Pi Day. You need to determine the area of your top pie crust as part of your assignment. You know that your pie has a diameter of 8 inches. What is the area of your pie?</p>	<p>6) You are on a picnic with your friends at the beach this summer. Your friend challenges you to determine the circumference of a plate. You figure out that the radius is 4.5 inches. What is the circumference of the plate?</p>

Unit: Knowledge of Measurement

Objective: Estimate and determine area of composite figures

Area Formulas		
Square: $A = s^2$	Parallelogram: $A = b \cdot h$	Trapezoid: $A = \frac{1}{2} h (b_1 + b_2)$
Rectangle: $A = l \cdot w$	Triangle: $A = \frac{1}{2}(b \cdot h)$	Circle: $A = \pi r^2$

Steps	Example			
1. Decompose the figure. (Split into smaller known shapes)				
2. Determine the area of each smaller shape	<table style="width: 100%; border: none;"> <tr> <td style="width: 33%; vertical-align: top;"> <p>Semi-circle $A = (\pi r^2) / 2$ $A = (3.14 \cdot 3^2) / 2$ $A = (3.14 \cdot 9) / 2$ $A = 28.26 \div 2$ $A = 14.13 \text{ in}^2$</p> </td> <td style="width: 33%; vertical-align: top;"> <p>Rectangle $A = l \cdot w$ $A = 10 \cdot 6$ $A = 60 \text{ in}^2$</p> </td> <td style="width: 33%; vertical-align: top;"> <p>Triangle $A = \frac{1}{2}(b \cdot h)$ $A = \frac{1}{2}(4 \cdot 6)$ $A = \frac{1}{2}(24)$ $A = 12 \text{ in}^2$</p> </td> </tr> </table>	<p>Semi-circle $A = (\pi r^2) / 2$ $A = (3.14 \cdot 3^2) / 2$ $A = (3.14 \cdot 9) / 2$ $A = 28.26 \div 2$ $A = 14.13 \text{ in}^2$</p>	<p>Rectangle $A = l \cdot w$ $A = 10 \cdot 6$ $A = 60 \text{ in}^2$</p>	<p>Triangle $A = \frac{1}{2}(b \cdot h)$ $A = \frac{1}{2}(4 \cdot 6)$ $A = \frac{1}{2}(24)$ $A = 12 \text{ in}^2$</p>
<p>Semi-circle $A = (\pi r^2) / 2$ $A = (3.14 \cdot 3^2) / 2$ $A = (3.14 \cdot 9) / 2$ $A = 28.26 \div 2$ $A = 14.13 \text{ in}^2$</p>	<p>Rectangle $A = l \cdot w$ $A = 10 \cdot 6$ $A = 60 \text{ in}^2$</p>	<p>Triangle $A = \frac{1}{2}(b \cdot h)$ $A = \frac{1}{2}(4 \cdot 6)$ $A = \frac{1}{2}(24)$ $A = 12 \text{ in}^2$</p>		
3. Add all the areas together.	<p>Total Area = $14.13 + 60 + 12$ Area = 86.13 in^2</p>			

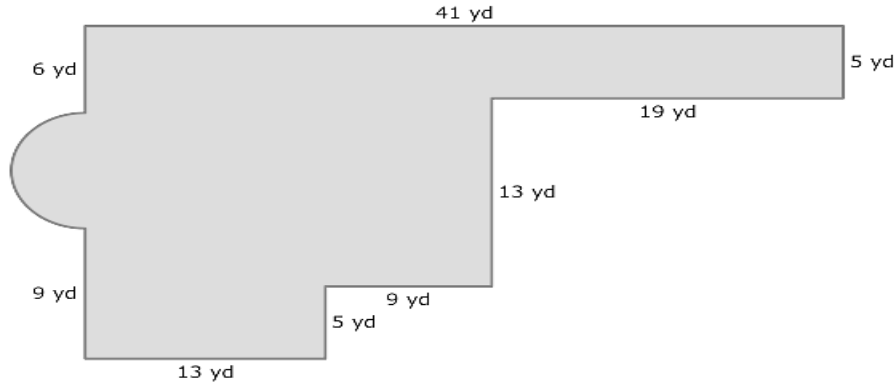
Find the area of each figure. Show all your work (draw lines, write the formula, substitute numbers and calculate). Make sure you include the correct units in your answer.

<p>1)</p>	<p>2)</p>
<p>3)</p>	<p>4)</p>

Composite Shapes – Problem Solving

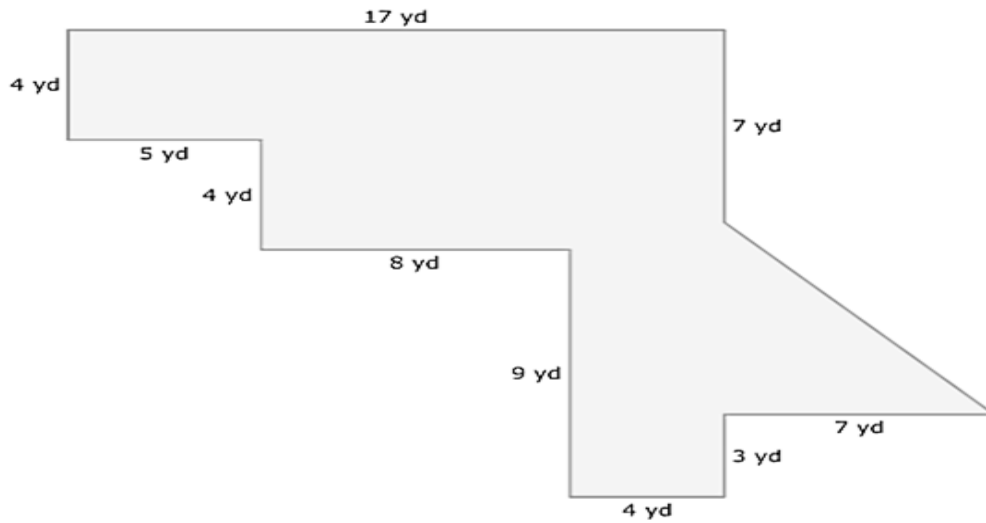
Solve the problems using the 4-step Plan. Show all your work, labeling each step and labeling your answer with the correct units.

1) You are building a garden. The following is the shape you have decided on. Determine the area of the figure in order to buy mulch. Round your answer to the nearest whole unit.



READ	
I know that . . .	I need to find out . . .
PLAN	
Create a Representation (picture, diagram, table)	I will choose the problem-solving strategy . . .
**See above	
SOLVE	CHECK
Show your work	My answer is reasonable because . . .
FINAL ANSWER	
I found out that . . .	

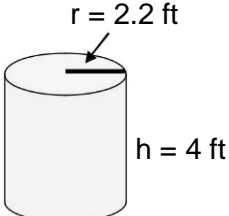
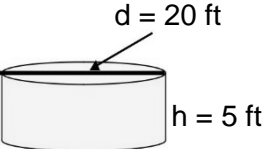
2) Susan is re-finishing her floors. The dimensions of her first floor are shown below. What is the area, in square yards, of Susan's floor?



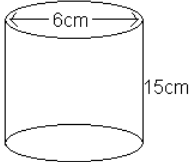
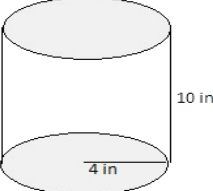
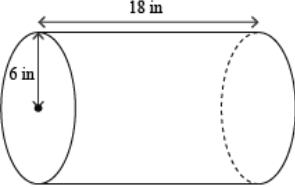
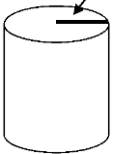
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I know that . . .	I need to find out . . .
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Create a Representation (picture, diagram, table)	I will choose the problem-solving strategy . . .
**See above	
SOLVE	CHECK
Show your work	My answer is reasonable because . . .
FINAL ANSWER	
I found out that . . .	

Unit: Knowledge of Measurement

Objective: Estimate and determine the volume of a cylinder

<p>Volume:</p> <ul style="list-style-type: none"> the amount a 3-D figure will hold expressed in cubed units; for example: cm^3 or cubic centimeters generalized formula: $V = B \cdot h$, where B = area of the base and h = height 	<p>Formula - The volume V of a cylinder with radius r is the area of the base (πr^2) times the height (h) or</p> $V = \pi r^2 h$ <ul style="list-style-type: none"> Remember: A circle's radius is always exactly half its diameter. $r = d \div 2$
 $V = \pi r^2 h$ $V = 3.14 \cdot 2.2^2 \cdot 4$ $V = 3.14 \cdot 4.84 \cdot 4$ $V = 15.1976 \cdot 4$ $V = 60.7904$ $V = 60.8 \text{ ft}^3$	 $r = d \div 2 = 20 \div 2 = 10$ $V = \pi r^2 h$ $V = 3.14 \cdot 10^2 \cdot 5$ $V = 3.14 \cdot 100 \cdot 5$ $V = 314 \cdot 5$ $V = 1570 \text{ ft}^3$

Solve the problems. Show all your work (write the formula, substitute numbers and calculate w/o a calculator). Make sure you include the correct units in your answer.

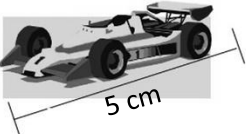
<p>1) Find the volume.</p> 	<p>2) Find the volume</p> 	<p>3) Find the volume.</p> 
<p>4) Find the height.</p>  $V = 392.5 \text{ ft}^3$	<p>5) A water tank is in the shape of a cylinder that has a height of 75 meters and a diameter of 20 meters. How much water does the tank hold?</p>	<p>6) Your Science teacher is teaching your class about Kaleidoscopes and how to build them. Your Kaleidoscope has a radius of 2 inches and a height of 9 in. What is the volume of your Kaleidoscope?</p>

Unit: Knowledge of Measurement

Objective: Use proportions, scale drawings, or rates to solve measurement problems

<p>Background:</p> <ul style="list-style-type: none"> Scale drawings and scale models can show objects that may be very big, very small, or very complex. Examples of scale drawings and scale models are maps, architects' drawings, and building models. A numerical scale is used to compute the actual dimensions. A SCALE is a ratio – the ratio between the dimensions of the drawing and the actual dimensions of the object. A RATE is a fixed ratio between two quantities of different units, such as miles and hours, dollars and hours. If the second number of a rate is 1 then the rate is called a UNIT RATE. Examples: 60 miles per hour and \$15 per hour 	<p>Solving Proportions:</p> <ol style="list-style-type: none"> Set up the proportion with the same units in the numerator and the same units in the denominator. Cross multiply. (i.e. Multiply the numerator on the left by the denominator on the right.) Solve the equation <p>Using/Solving for Unit Rate</p> <ul style="list-style-type: none"> To find the unit rate, divide the numerator and denominator of the given rate by the denominator of the given rate. The denominator should be the quantity that you want to identify by 1. If you know the unit rate, you can multiply to find multiple amounts of a quantity.
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EXAMPLES

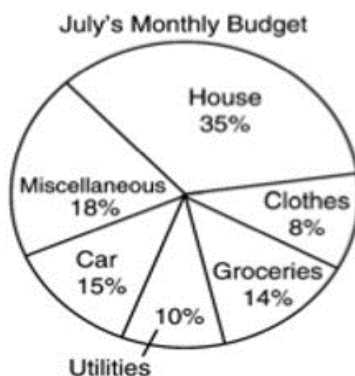
Problem	Solution
<p>On a map, Andy measured the distance between Baltimore and Hagerstown. It is 9 cm. The scale on the map shows 4 cm = 30 miles. What is the approximate distance from Baltimore to Hagerstown? STRATEGY: Write a proportion and solve it.</p>	$\frac{\text{cm}}{\text{mi}} \quad \frac{4}{30} = \frac{9}{x}$ $4 \cdot x = 30 \cdot 9$ $4x = 270$ $x = 67.5$ <p>The distance from Baltimore to Hagerstown is 67.5 miles.</p>
<p>Look at this scale drawing. How many meters long is the actual race car?</p>  <p style="text-align: right;">Scale 1 cm = 1.5 m</p>	$\frac{\text{cm}}{\text{m}} \quad \frac{1}{1.5} = \frac{5}{x}$ $1 \cdot x = 1.5 \cdot 5$ $x = 7.5$ <p>The actual car is 7.5m long.</p>
<p>Last week Mike worked 30 hours and earned \$240. What was his rate of pay?</p> <p>STRATEGY: Divide the total earned by the number of hours. Find the unit rate.</p>	$\frac{\text{money earned}}{\text{hours worked}} \quad \frac{240}{30}$ $240 \div 30 = 8$ <p>Mike earned \$8 per hour.</p>
<p>The unit price of a can of tuna fish at the GHK Supermarket is \$2.43. How much will 7 cans cost?</p> <p>STRATEGY: Use the definition of unit price.</p>	<p>Unit price means the price of one unit or the price of one can of tuna fish.\$2.43</p> <p>Multiply to find the cost of 7 cans.</p> $2.43 \cdot 7 = 17.01$ <p>Seven cans of tuna fish cost \$17.01</p>

Solve the problems. Show all your work (write the unit ratio, create the proportion and calculate). Make sure you include the correct units in your answer.

<p>1) Solve for n</p> $\frac{6}{9} = \frac{n}{12}$	<p>2) Solve for n</p> $\frac{1}{6} = \frac{4.25}{n}$	<p>3) A 2.6-kg bag of cherries for \$4.84. How much per kg.</p>
<p>4) An international phone call costs \$8.72 for 27 minutes. What is the rate per minute?</p>	<p>5) The distance on a map is 4.25 inches. The map scale is 1 inch = 6 miles. What is the actual distance?</p>	<p>6) If you travel 500 km in 20 hours, how many km do you travel per hour?</p>
<p>7) A girl who is 4 feet tall casts a shadow of 3 feet. If a flagpole is 20 feet high, what is the length of the shadow of the flagpole?</p>	<p>8) On an architectural drawing, the scale is 0.25 inch=5 feet. Determine the actual length of a room that has a drawing distance of 2 inches.</p>	<p>9) There are 1962 calories for 6 servings of pie. How many calories per serving?</p>
<p>10) On a map, the key indicates that 1 cm = 3.5 meters. A road is shown on this map that runs for 30 cm. How long is this road?</p>	<p>11) You were hired for the summer to mow your neighbor's lawn. You earned a total of \$372 and worked a total of 12 days. How much did you earn per day?</p>	<p>12) Sheryl swims 5 laps in 15 minutes. At this same rate, how many laps will she swim in 30 minutes?</p>

Unit: Knowledge of Statistics
Objective: Interpret circle graphs

	RULE	EXAMPLE	ALTERNATIVE
	<p>Percent Proportion</p> $\frac{\text{Part}}{\text{Whole}} = \frac{\%}{100}$	<p>What number is 25% of 520?</p> $\frac{P}{520} = \frac{25}{100}$ $100P = 520 \times 25$ $100P = 13,000$ $P = 13,000 \div 100$ $P = 130$ <p>130 is 25% of 520</p>	<ul style="list-style-type: none"> Change the percent to a decimal. Multiply the decimal and the whole to find the part.
	<ul style="list-style-type: none"> Identify the part, whole, and /or percent Plug the numbers into the proportion and solve 		$25\% = .25$ $P = 520 \times .25$ $P = 130$ <p>130 is 25% of 520</p>



Use the Circle Graph above to answer the questions. Show all your work.

<p>1) What percent does Judy spend on house and groceries ?</p>	<p>2) Which 3 expenses make up 59% of Judy's budget?</p>
<p>3) If Judy's salary is \$2000/month, how much does she spend on groceries?</p>	<p>4) Judy is getting a raise of \$125. What percent will she spend on food and clothes?</p>
<p>5) Judy adjusts her budget. She increased her clothing allowance to 10%. She will decrease the amount of miscellaneous expenses. What will the new percentage be? Explain your answer.</p>	<p>6) How much more did Judy spend on utilities than on clothes if her paycheck was \$2500?</p>

Unit: Knowledge of Statistics
Objective: Interpret tables

Maryland State Parks

Park	# of Campsites	Area in Acres
Assateague Island	350	756
Janes Island	104	3,147
Martinak	63	107
Pocomoke River	223	94
Tuckahoe	51	3,498

Use the Table above to answer the questions. Show all your work.

1) How much larger is Janes Island State Park than Pocomoke River State Park?	2) What is the difference in the number of campsites between the smallest park and the largest park?
3) What is the difference in acreage between the park with the most campsites and the park with the least campsites?	4) Which two parks total more than 4,000 acres but less than 5,000 acres? What is their total combined acreage?
5) Which park has more campsites per acre, Assateague Island or Martinak?	6) What percent of the total number of campsites is found at Assateague Island? Round your answer to the nearest whole number.

Unit: Knowledge of Statistics

Objective: Review

Circle the correct answer.

<p>1) A graph is a diagram consisting of lines, bars, or circles to represent information. True False</p>	<p>2) Surveying 2 people at a library about the types of books they like to read is an example of a representative sample. True False</p>
<p>3) A sample is the entirety of a group being studied, while a population is the part of that group that is being surveyed. True False</p>	<p>4) Theoretical probability is what does happen, while experimental probability is what should happen. True False</p>
<p>5) The average of a set of numbers is called the _____. A. mean B. median C. mode D. range</p>	<p>6) The data that appears the most often in a set of data is called the _____. A. mean B. median C. mode D. range</p>
<p>7) The difference between the largest and smallest numbers in a set of data is called the _____. A. mean B. mode C. range D. median</p>	<p>8) The middle number in a set of ordered values is called the _____. E. mean F. median G. mode H. range</p>
<p>9) Based on the list of golf scores below, what is the median, mean, and range for the set? <u>71, 68, 72, 79, 80, 77, 84, 70, 92</u> A. median=77, mean=77, range=24 B. median=80, mean=78, range=22 C. median=81, mean=77, range=23</p> <p style="text-align: right;">Show your calculations and work.</p>	

Unit: Knowledge of Probability

Objective: Express the probability of an event as a fraction, a decimal, or a percent

<ul style="list-style-type: none"> • Probability (P) is a way to measure the chance that an event will occur. • Probability can be expressed as a <u>fraction</u>, <u>decimal</u>, or <u>percent</u>. 	$P = \frac{\text{number of favorable outcomes}}{\text{number of possible outcomes}}$
<p>Example: A jar contains 10 purple, 3 orange, and 12 blue marbles. A marble is drawn at random. Determine the probability that you will pick a purple marble. Express your answer in a fraction, decimal, and %.</p>	
<p>Step 1 – Determine the total # of marbles.</p>	$10 + 3 + 12 = 25$
<p>Step 2 – Determine the probability of picking a purple marble.</p>	$P = \frac{\text{number of favorable outcomes}}{\text{number of possible outcomes}} = \frac{10}{25}$
<p>Step 3 – Simplify the fraction.</p>	$P = \frac{2}{5}$
<p>Step 4 – Convert Fraction to a Decimal</p>	$2 \div 5 = 0.4$
<p>Step 5 – Convert Decimal to a %</p>	$0.4 = 40\%$

For Questions # 1 – 6, Determine the probability for the following situation. Express your answer in Fraction, Decimal, and % forms. Show all your work.

<p>A jar contains 15 orange, 14 white, 10 pink, 2 green, and 4 blue marbles. A marble is drawn at random.</p>	
<p>1) P (orange) = _____ = _____ = _____%</p>	<p>2) P (black) = _____ = _____ = _____%</p>
<p>3) P (not blue) = _____ = _____ = _____%</p>	<p>4) P (not pink) = _____ = _____ = _____%</p>
<p>5) P (all colors) = _____ = _____ = _____%</p>	<p>6) P(pink or orange) = _____ = _____ = _____%</p>

Unit: Knowledge of Probability

Objective: Describe the difference between independent and dependent events

<ul style="list-style-type: none">Two events are INDEPENDENT when the outcome of one event has no effect on the outcome of another event.When determining the probability of two independent events, multiply the probabilities of the two events to get the total probability. This is called the multiplication rule.	
Example: Determine the probability of tossing a coin and getting tails and tossing a number cube and getting a number less than 5.	
Step 1: Determine the probability of each event.	Tossing the coin: $P(\text{tails}) = \frac{1}{2}$ Tossing the number cube: $P(<5) = \frac{4}{6}$
Step 2: Apply the multiplication rule.	$\frac{1}{2} \cdot \frac{4}{6} = \frac{4}{12} = \frac{1}{3}$ The probability is $\frac{1}{3}$
<ul style="list-style-type: none">Two events are DEPENDENT when the outcome of one event is affected by the outcome of the other.Example: You draw a yellow marble out of a bag of marbles and do NOT replace the marble before drawing a second marble. If you started with 20 marbles, you no longer have 20 – you now have 19. This situation is DEPENDENT on what happened during the first draw.	

Answer each question. Show all work.

1) Describe the difference between Independent and Dependent Events. Give an example of each (Do not use the above examples).	
2) Circle the situation(s) that are dependent. A. Picking a cookie from the cookie jar, eating it, then choosing another cookie. B. Toss a coin and spin a colored spinner C. Picking colored marble and then rolling a die	3) You flip a coin and toss a 1-6 number cube. Determine $P(\text{not tails and not a 3})$.
4) Jack heard the weather forecast on TV: the probability of rain today is 20% and the probability of rain tomorrow is 50%. What is the probability that it will rain on both days?	5) You roll a number cube numbered from 1 to 6. You then spin a spinner with 3 sections each with a different color. The spinner has the colors orange, gray, and pink. Determine $P(\text{not 6 and orange})$.

Unit: Knowledge of Probability

Objective: Determine the probability that a second event is dependent upon a first event of equally likely outcomes and express the probability as a fraction, decimal, or percent

Example: A bag contains 3 green, 3 blue, and 3 yellow marbles. What is the probability of drawing a blue marble followed by a yellow marble in that order when you draw two marbles from the bag without returning the first marble to the bag?

Step 1: Determine the probability of getting blue as the first marble.

$$P(\text{blue}) = \frac{3}{9} = \frac{1}{3}$$

Step 2: Determine the probability of getting yellow as the second marble. NOTE: There are only 8 marbles left in the bag.

$$P(\text{yellow}) = \frac{3}{8}$$

Step 3: Apply the multiplication rule.

$$\frac{1}{3} \cdot \frac{3}{8} = \frac{3}{24} = \frac{1}{8}$$

SOLUTION: The probability of getting blue and then yellow without returning the first marble to the bag is $\frac{1}{8}$.

Solve each problem. Show all work.

1) A deck of cards has 3 blue, 4 black, and 6 purple cards. You pick 2 cards from the deck. Cards are not returned to the deck after they are picked. Express the probability as a simplified fraction.

$$P(\text{two blue cards in a row}) = \underline{\hspace{2cm}}$$

2) There are 6 red, 2 yellow, 6 black, and 5 blue marbles in a hat. You pick 2 marbles from the hat. Marbles are not returned after they have been drawn. Express the probability as a %. Round to the nearest tenth.

$$P(\text{first is red and second is black}) = \underline{\hspace{2cm}}$$

3) Mike has 25 red tiles, 10 green tiles, and 15 blue tiles in a paper bag. If he chooses a tile at random, does not return it to the bag, and then chooses a second tile, what is the probability that the two tiles will be green and blue in that order? Express your answer as a decimal, rounded to the nearest hundredth.

4) Jason has 4 quarters, 3 dimes, and 3 nickels in his pocket. Jason reaches into his pocket and pulls out a dime and does not replace it. Determine the probability that he will now pull out a nickel. Express your answer as a percent. Round your answer to the nearest tenth of a percent.

Unit: Knowledge of Number Relationships and Computation

Objective: Estimate the square roots of whole numbers

<p>Background Information:</p> <ul style="list-style-type: none"> • A Perfect Square is the square of a whole number. • A square root of a number is one of two equal factors of the number. • Every positive number has a positive square root and a negative square root. • The square root of a negative number such as -25, is not real because the square of a number is never negative. 	<p>Examples:</p> <p>$\sqrt{144}$ Since $12^2 = 144$, then $\sqrt{144} = 12$</p> <p>$-\sqrt{49}$ Since $7^2 = 49$, then $-\sqrt{49} = -7$</p> <p>$\pm\sqrt{4}$ Since $2^2 = 4$, then $\pm\sqrt{4} = \pm 2$</p>
<p>Estimate the square root of a number that is not a perfect square. Estimate $\sqrt{34}$</p>	
<p>Step 1: Determine the two perfect squares the number falls between.</p>	<p>$\sqrt{34}$ is between $\sqrt{25}$ and $\sqrt{36}$</p>
<p>Step 2: Determine which perfect square is closest to the number.</p>	<p>$\sqrt{34}$ is closer to $\sqrt{36}$</p>
<p>Step 3: Estimate a square root based on how close the number is to the perfect square.</p>	<p>So, $\sqrt{34}$ is closer to 6 than 5. Estimate 5.7</p>
<p>Step 4: Square the number chosen.</p>	<p>$5.7 \cdot 5.7 = 32.49$</p>
<p>Step 5: Find the difference between your answer and the target number.</p>	<p>$34 - 32.49 = 1.51$</p>
<p>Step 6: Based on the difference, adjust the number up or down.</p>	<p>Estimate 5.8</p>
<p>Step 7: Repeat steps 4 and 5.</p>	<p>$5.8 \cdot 5.8 = 33.64$ $34 - 33.64 = .36$</p>
<p>Step 8: Select the number that resulted in the smallest difference.</p>	<p>5.8 is the best estimate. $\sqrt{34} \approx 5.8$</p>

Solve the following problems. Show all work.

<p>1) $-\sqrt{100}$</p>	<p>2) $\pm\sqrt{81}$</p>	<p>3) A square tarpaulin covering a softball field has an area of 121 m². What is the length of one side of the tarpaulin?</p>
<p>4) Estimate $\sqrt{47}$ to the nearest tenth.</p>	<p>5) Estimate $\sqrt{150}$ to the nearest tenth.</p>	<p>6) If $x^2 = 76$, estimate the value of x to the nearest tenth.</p>

Problem Solving

Solve the problems using the 4-step Plan. Show all your work, labeling each step and labeling your answer with the correct units.

1) Julia makes \$36 an hour. She gets a 10% raise. She works 40 hours a week. How much more money will she make this week as a result of her raise?

READ	
I know that . . .	I need to find out . . .
PLAN	
Create a Representation (picture, diagram, table)	I will choose the problem-solving strategy . . .
SOLVE	CHECK
Show your work	My answer is reasonable because . . .
FINAL ANSWER	
I found out that . . .	

2) You want to place a mat that is $3\frac{1}{2}$ inches long in the center of a table that is $7\frac{1}{2}$ inches wide. How far from the edge will you place the mat?

READ	
I know that . . .	I need to find out . . .
PLAN	
Create a Representation (picture, diagram, table)	I will choose the problem-solving strategy . . .
SOLVE	CHECK
Show your work	My answer is reasonable because . . .
FINAL ANSWER	
I found out that . . .	

3) Two children conduct the same survey about the number of apples that people eat. The results of the number of people who eat apples in the evening are shown below. In which person's survey did the most people eat apples in the evening?

- Barry reported that 12 out of the 30 people that he surveyed eat apples in the evening.
- Ethan reported that 36% of the people that he surveyed eat apples in the evening.

READ	
I know that . . .	I need to find out . . .
PLAN	
Create a Representation (picture, diagram, table)	I will choose the problem-solving strategy . . .
SOLVE	CHECK
Show your work	My answer is reasonable because . . .
FINAL ANSWER	
I found out that . . .	

4) Three students conduct the same survey about the amount of coffee people drink in the morning. The results of the number of people who drink coffee are shown below. In which survey did people drink the most coffee?

- Debbie reported that 21 of the 50 people she surveyed drink coffee in the morning.
- Allen reported that 45% of the people he surveyed drink coffee in the morning.
- Benny reported that 0.495 of the people he surveyed drink coffee in the morning.

READ	
I know that . . .	I need to find out . . .
PLAN	
Create a Representation (picture, diagram, table)	I will choose the problem-solving strategy . . .
SOLVE	CHECK
Show your work	My answer is reasonable because . . .
FINAL ANSWER	
I found out that . . .	

5) 5 hockey pucks and three hockey sticks cost \$23. 5 hockey pucks and 1 hockey stick cost \$20. How much does 1 hockey puck cost?

READ	
I know that . . .	I need to find out . . .
PLAN	
Create a Representation (picture, diagram, table)	I will choose the problem-solving strategy . . .
SOLVE	CHECK
Show your work	My answer is reasonable because . . .
FINAL ANSWER	
I found out that . . .	

6) Parents donated fudge for the fund raiser for your classroom. 40 pounds of chocolate fudge sold for \$2.15 per pound and vanilla fudge sold for \$1.90. per pound. Your class made \$158.20. How many pounds of fudge were sold?

READ

I know that . . .

I need to find out . . .

PLAN

Create a Representation (picture, diagram, table)

I will choose the problem-solving strategy . . .

SOLVE

Show your work

CHECK

My answer is reasonable because . . .

FINAL ANSWER

I found out that . . .

7) Excavation for a pool is being done in your backyard. It measures 42ft x 29ft x 8ft. The dirt will be taken away in a truck that holds 4.53 ft³. How many truckloads of dirt will be taken away?

READ	
I know that . . .	I need to find out . . .
PLAN	
Create a Representation (picture, diagram, table)	I will choose the problem-solving strategy . . .
SOLVE	CHECK
Show your work	My answer is reasonable because . . .
FINAL ANSWER	
I found out that . . .	

8) A 7 feet long ladder is leaning against the building. The foot of the ladder is 2 feet from the base of the building. How far up the wall is the top of the ladder?

READ	
I know that . . .	I need to find out . . .
PLAN	
Create a Representation (picture, diagram, table)	I will choose the problem-solving strategy . . .
SOLVE	CHECK
Show your work	My answer is reasonable because . . .
FINAL ANSWER	
I found out that . . .	

9) The sum of three consecutive even numbers is 48. What is the smallest of these numbers?

READ	
I know that . . .	I need to find out . . .
PLAN	
Create a Representation (picture, diagram, table)	I will choose the problem-solving strategy . . .
SOLVE	CHECK
Show your work	My answer is reasonable because . . .
FINAL ANSWER	
I found out that . . .	

10) A season ticket to the Olde Theatre costs \$76 and admits you to 6 plays. Single tickets to each play cost \$15. How much do you save on each play by buying a season ticket?

READ	
I know that . . .	I need to find out . . .
PLAN	
Create a Representation (picture, diagram, table)	I will choose the problem-solving strategy . . .
SOLVE	CHECK
Show your work	My answer is reasonable because . . .
FINAL ANSWER	
I found out that . . .	

11) Susan won 40 super bouncy balls playing horseshoes at her school's game night. Later, she gave two to each of her friends. She only has 8 remaining. How many friends does she have?

READ	
I know that . . .	I need to find out . . .
PLAN	
Create a Representation (picture, diagram, table)	I will choose the problem-solving strategy . . .
SOLVE	CHECK
Show your work	My answer is reasonable because . . .
FINAL ANSWER	
I found out that . . .	

12) Aliyah had some candy to give to her four children. She first took ten pieces for herself and then evenly divided the rest among her children. Each child received two pieces. With how many pieces did she start?

READ	
I know that . . .	I need to find out . . .
PLAN	
Create a Representation (picture, diagram, table)	I will choose the problem-solving strategy . . .
SOLVE	CHECK
Show your work	My answer is reasonable because . . .
FINAL ANSWER	
I found out that . . .	

13) Jill sold half of her comic books and then bought sixteen more. She now has 36. With how many did she begin?

READ	
I know that . . .	I need to find out . . .
PLAN	
Create a Representation (picture, diagram, table)	I will choose the problem-solving strategy . . .
SOLVE	CHECK
Show your work	My answer is reasonable because . . .
FINAL ANSWER	
I found out that . . .	

14) A student answered 86 problems on a test correctly and received a grade 98%. How many problems were on the test, if all the problems were worth the same number of points? (Round to the nearest whole number)

READ	
I know that . . .	I need to find out . . .
PLAN	
Create a Representation (picture, diagram, table)	I will choose the problem-solving strategy . . .
SOLVE	CHECK
Show your work	My answer is reasonable because . . .
FINAL ANSWER	
I found out that . . .	

15) There are three different basketball teams, and each has played five games. You have each team's score from each of its games.

	Game 1	Game 2	Game 3	Game 4	Game 5
Jaguars	67	87	54	99	78
Wolves	85	90	44	80	46
Lions	32	101	65	88	55

Suppose you want to join one of the three basketball teams. You want to join the one that is doing the best so far. If you rank each team by their mean scores, which team would you join?

READ

I know that . . .

I need to find out . . .

PLAN

Create a Representation (picture, diagram, table)

I will choose the problem-solving strategy . . .

SOLVE

Show your work

CHECK

My answer is reasonable because . . .

FINAL ANSWER

I found out that . . .