1.1f Homework: Creating and Solving Linear Equations to Model Real World Problems Part I

1. Use the story below about Sanjeet and his friends' end-of-season basketball statistics to answer the questions that follow.

Points Scored	Story		
Terrence's points: x	Sanjeet and his team members were looking		
Sanjeet's points: Cole's points:	at the total points scored by each player		
Equation:	during the season. Sanjeet scored twice as		
	many points as Terrence. Cole scored 12		
	more points than Sanjeet. Together the boys		
	scored 992 points during the season. How		
	many points did each boy score?		
	3 1		

- a. Write expressions in the spaces provided above for the total points scored by each player during the season if Terrence scored x points.
- b. Write an equation that represents this situation in the space above.
- c. Solve your equation to determine the number of points scored by each boy during the season.

Cole:

Terrence: _____ Sanjeet: _____

- d. Double check your answers. Do your answers show that Sanjeet scored twice as many points as Terrence? That Cole scored 12 more points that Sanjeet? Do the scores sum to 992?
- 2. Uncle Hank has another riddle for his nephews. He tells them, "I have the same number of nickels and pennies. I have 4 times as many guarters as nickels. I have 3 more dimes than guarters. I have a total of \$6.14. Whoever can solve my riddle will get my coins."
 - a. Ben has started the equation for solving the riddle.
 - b. Finish writing the equation that represents the riddle.

0.01 <i>p</i> +
value of
pennies

c. How many of each type of coin does Uncle Hank have?

Quarters:	Dimes:	Nickels:	Pennies:
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- 3. During the summer, Victoria plays soccer and takes swim and piano lessons. Each swim lesson is 15 minutes shorter than a soccer practice. Each piano lesson is twice as long as a soccer practice. Use this information to answer the questions that follow.
 - a. The following expressions represent how long an activity is each time she goes. Write the name of the activity that matches each expression on the lines provided.

t:	
<i>t</i> – 15:	
2t:	

- b. Victoria has soccer three times a week, swimming four times a week, and piano twice a week. She spends a total of 435 minutes each week doing these three activities a week. Write an equation that represents this situation.
- c. How long is one session of each activity?

Soccer:	Swimming:	Piano:
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4. The ratio of freshmen to sophomores to juniors to seniors in band is 1:2:3:2. If there are a total of 240 students in the band, how many are in each grade level?

Freshmen:	Sophomores:	Juniors:	Seniors:
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5. The art teacher is making salt dough for an upcoming project. The ratio of flour to salt to water used to make salt dough is shown below.

Making Salt Dough Cups of flour: 2 <i>c</i>	Story		
Cups of salt: <i>c</i>			
Cups of water: $\frac{3}{4}c$			
$2c + c + \frac{3}{4}c = 60$ cups			
4			
a. Write a story that matchedb. Solve the equation. How	es the expressions and equation shown on the left. many cups of each ingredient is the art teacher planning to use?		
Cups of flour: C	ups of salt: Cups of water:		
6. Use the story below about a trian	ngle to answer the questions that follow.		
Angles in a Triangle	Story		
<i>m</i> ∠ <i>A</i> :			
<i>m∠B</i> :	In $\triangle ABC$, the measure of $\angle B$ is three times		
<i>m</i> ∠c:x	larger than the measure of $\angle C$. The measure		
Equation:	of $\angle A$ is twice as large as the measure of		
	∠C.The sum of the angles in a triangle is		
	180°.		

a. Write the expressions and equation matching the story on the lines provided above.

b. What is the measure of each angle in the triangle?

 $m \angle A =$ _____

 $m \angle B = _$

7. The width of a rectangle is six more than four times its length. A model of this situation has been drawn below. Use this information to answer the questions that follow.

Length:			
Width:			+6

- a. Write an expression that represents the perimeter of the rectangle.
- b. If the perimeter of the rectangle is 112 feet, write an equation to represent this situation and find the length and width of the rectangle.

Length:

Width: _____

- 8. A marble jar has twice as many blue marbles as red marbles, 16 more green marbles than blue marbles, and 10 fewer white marbles than red marbles. The jar has a total of 150 marbles. Use this information to answer the questions that follow.
 - a. The following equation represents this situation. Match each piece of the equation to the appropriate marble color. Write your answer in the boxes provided.



b. Determine how many marbles of each color are in the jar.

Blue:	Red:	Green:	White:
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9. Use the expressions and equation below about the cost of clothes to answer the questions that follow.

<u>The Cost of Clothes</u> Cost of a shirt: <i>c</i>	Story
Cost of a pair of jeans: $c + 12$	
3c + 2(c + 12) = \$164	

a. Write a story that matches the expressions and equation in the space provided.

b. Solve the equation to determine the cost of a shirt and the cost of a pair of jeans.

Cost of a shirt: _____ Cost of a pair of jeans: _____

Directions: Write and solve an equation to answer each of the following problems. Use pictures and models to help you. Refer back to similar problems you have already seen in the chapter to help you if you get stuck. Make sure your answers are displayed clearly with the appropriate units.

10. The width of a rectangle is five less than three times the length of the rectangle. If the perimeter of the rectangle is 70 inches what are the dimensions of the rectangle?

11. At Shoes for Less, a pair of shoes is \$15 less than a pair of boots. Cho purchased three pairs of shoes and two pairs of boots for \$120. How much does a pair of boots cost?

12. Central Lewis High School has five times as many desktop computers as laptops. The school has a total of 360 computers. How many laptops does Central Lewis High School have?

13. In ΔLMN , the measure of $\angle L$ is equal to the measure of $\angle M$. The measure of $\angle N$ is twice the measure of $\angle M$. Find the measure of each angle in ΔLMN .

14. Adam is trying to solve the following riddle: "The sum of three consecutive integers is -36. What are the integers?" Solve Adam's riddle.

15. Afua got a 90% on her first math exam, a 76% on her second math exam, and a 92% on her third math exam. What must she score on her fourth exam to have an average of 88% in the class?

16. At Discovery Preschool, parents who have two students enrolled get a discount on the second child. The second child's tuition is 10 dollars less per day than the first child's. If Tess has her two children enrolled for 5 days and her total bill for both children is \$200, how much does she pay each day for her second child to attend daycare?