

**Pre-Algebra Problem Set 4** First Name \_\_\_\_\_ Last \_\_\_\_\_

Assigned Thursday 9/26, due Friday 10/4

**NO Work Shown, NO Credit Given** Period \_\_\_\_\_

**Problems #1-4 can be completed on this paper.**

1. Place the following probabilities on the number above. Label each probability with the corresponding letter: **A)** A  $\frac{1}{4}$  chance that you will return the math spirals tomorrow.

**B)** A 25% chance of rain tomorrow.

**C)** A 0.8 probability of eating vegetables with dinner.

**D)**  $P(\text{blue marble}) = \frac{5}{8}$

**E)** A 0.01 probability that it will be 85°F on Saturday.

2. Write “theoretical” or “experimental” to describe the probabilities for each of the situations:

a) The chance of getting tails when flipping a coin is  $\frac{1}{2}$ .

b) I flipped a coin eight times and got heads six times, so the probability is  $\frac{6}{8}$ .

c) My mom packed my lunch three of the past five days, so the probability of my mom packing my lunch is  $\frac{3}{5}$ .

d) The chance of winning the state lottery is 1 in 98,000,000.

e) Based on mathematical models, the chance of rain today is 60%.

f) Lena got three “hits” in her last seven times at bats, so her chance of getting a hit is  $\frac{3}{7}$ .

3. A fair number cube with the numbers 1, 2, 3, 4, 5, and 6 is rolled.

a) What is the probability of getting an even number?

b) What is the probability of getting a factor of 6?

4. Rewrite each fraction as a percent and each percent as a simplified fraction.

a)  $\frac{2}{5}$

b) 45%

c)  $\frac{9}{25}$

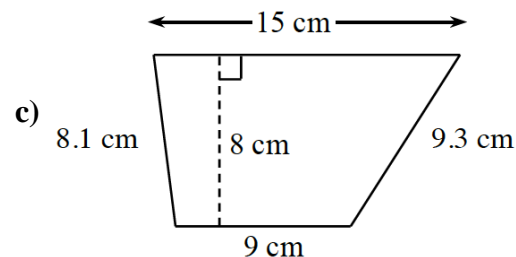
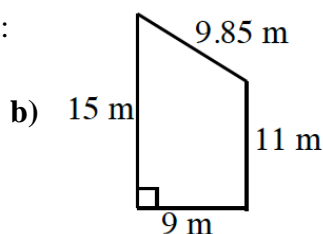
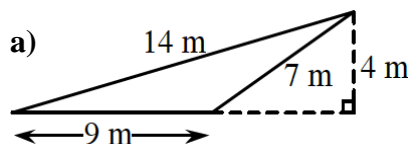
d) 120%

e)  $\frac{9}{6}$

**Please show your work for #5-12 on a separate piece of paper, and staple to this homework.**

5. Mrs. Mulligan’s bag contains 36 marbles. If the probability of reaching in and pulling out a blue marble at random is  $\frac{4}{9}$ , how many blue marbles are in the bag? How do you know?

6. Find the area of each figure below:



**7.** Imagine that you have a bag containing 10 marbles of different colors. You have drawn a marble, recorded its color, and replaced it fifty times, with the following results: 9 purple, 16 orange, 6 yellow, and 19 green marbles. Make a prediction for how many marbles of each color are in the bag. Show all of your work or explain your reasoning.

**8.** Tom keeps all of his favorite marbles in a special leather bag. Right now, five red marbles, four blue marbles, and three yellow marbles are in the bag.

**a)** If he randomly chooses one marble to give to a friend, what is the probability that it is blue? Write your probability as a fraction.

**b)** Tom does not really want to give away blue marbles and would like to change the probability that he chooses a blue marble to 10%. How many marbles that are not blue could he add to the bag so that the probability of choosing a blue marble becomes 10%?

**9.** Find the mean and median of each data set below. Label which answer is your mean, and which answer is your median. Look for shortcuts that save time.

**a)** 6, 10, 6, 10

**b)** 11, 12, 12, 13, 12

**c)** 0, 5, 4, 8, 0, 7

**10.** Your team is in charge of games at the CMS Amusement Park. One of the games involves a robotic arm that randomly grabs a stuffed animal out of a large bin. You need to set up the game so that the probability of a customer's grabbing a teddy bear is exactly 50%.

**a)** How would you set up the bin? Explain.

**b)** What if you returned to check on the bin and found that there were 4 teddy bears left and 12 other animals? What could you add to or remove from the bin to return the probability of selecting a teddy bear to 50%?

**11.** Marissa is drawing coins from a bag that contains 5 pennies, 4 nickels, 5 dimes, and 2 quarters.

**a)** What is the probability that she will draw a nickel? Write your answer as a fraction, as a decimal, and as a percent.

**b)** If one penny, two dimes, and one quarter are added to the bag, what is the new probability that Marissa will draw a nickel? Write your answer as a fraction, as a decimal, and as a percent.

**c)** In which situation is it more likely that Marissa will draw a nickel?

**12.** Mario was visiting the carnival when he noticed a few number relationships. He made them into brainteasers for you.

**a)** If three tenths of the visitors were adults and there were 100 visitors, how many visitors were adults?

**b)** Five eighths of the prizes at the Giant Spin were dolls. If there were 64 prizes, how many prizes were *not* dolls?

