ASSIGNMENT

Represent the sample space for each experiment by making a tree diagram.

1. For each at bat, a player can either get on base or make an out. Suppose a player bats twice.

2. Quinton sold the most tickets in his school for the annual Autumn Festival. As a reward, he gets to choose

   twice from a grab bag with tickets that say "free juice", "free notebook" or "snack".

3. Patrick is renting a prom tuxedo. Draw a tree diagram to represent the sample space for tuxedo options.

   Options:

   Tie Color: Umber (U), Sage (S), Rust (R), Periwinkle (P)

   Suit Color: Ivory (I), Black (B)
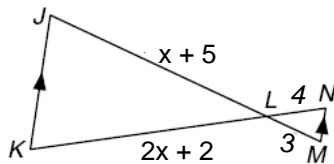
   Additional Options: Vest (V), Cummerbund (C)

Find the number of possible outcomes for each situation.

4. In the Student Council elections, there are 3 people running for secretary, 4 people running for treasurer, 5

   people running for vice president, and 2 people running for class president.

7. Evita works at a restaurant where she has to wear a white blouse, black pants or skirt, and black shoes. She

   has 5 blouses, 4 pants, 3 skirts, and 6 pairs of black shoes.

9. A briefcase lock has 3 rotating cylinders, each containing 10 digits. How many numerical codes are possible?

10. How many 7-digit phone numbers can be formed if the first digit cannot be 0 or 1, and if no digit can be

    repeated?

11. How many different license plates can be made if each license plate contains 2 digits and 4 letters? Digits

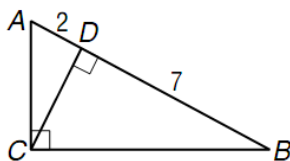   may be used more than once, but the letters may not.

Review

12.   A lighthouse casts a 128-foot shadow. A nearby lamppost that measures 5.25 feet casts an 8-foot
       shadow. **Make a sketch of the situation.** Write a proportion that could be used to determine the height
       of the lighthouse. Then solve the proportion.

13.   Find the value of x.

14. Find the length of $\overline{CD}$.

2

Geometry B   Name _____
12.2 Probabilities with Permutations and Combinations   Hour _____ Date _____
<p style="text-align:center;"><u>**ASSIGNMENT**</u></p>

1. You have 7 hats on a shelf in your closet. How many ways are there to arrange all 7 hats?

2. There are 9 positions on a baseball field. If 9 guys show up to play, how many ways are there to arrange them on the field?

Evaluate

3. $_5P_2$ 4. $_7P_3$ 5. $_5C_2$ 6. $_7C_3$

For #7-13,	a. Determine whether the situation involves a <u>**combination**</u> or a <u>**permutation**</u>.
	b. <u>**Solve**</u> the problem.

7. In how many ways may a committee of 6 be chosen from a group of 25 people?

permutation / combination

8. A group of fifteen men wish to play on a basketball team. Find the number of teams that can be formed if there are 5 men chosen for a team.

permutation / combination

9. In how many ways can a judge award first, second, and third places in a contest with fourteen entrees if there are not ties?

permutation / combination

10. A track coach has a group of seven men to choose from in order to have a four-man relay team. How many line-ups can he form (order matters)?

permutation / combination

11. How many ways can a president, vice-president, and secretary be chosen from a committee of 7 people?

   permutation / combination

12. A bicycle owner has 12 mountain bikes in the showroom. The owner wishes to display 4 of them at a bicycle show. How many different ways can 4 bikes be arranged in a line to be displayed?

   permutation / combination

13. How many different 5-card hands can be formed from a standard deck of cards?

   permutation / combination

Review

14. How many 4-letter words can be made from the first 6 letters of the alphabet if repetitions are not allowed and each arrangement of letters does not necessarily have to form a meaningful word?

15. How many different license plates are possible if each contains 2 letters followed by 3 digits (0, 1, …, 9) and digits and letters may be repeated?

16. Joey and Julie are lined up with 10 family members (12 people total) for a photo at a family gathering.

   a. In how many ways can all 12 family members be arranged?

   b. In how many ways can all 12 family members be arranged if Joey must be positioned at the far left end of the line, and Julie must be at the far right end of the line?

17. Tonya is taking a geology quiz. How many ways can she answer all the questions on the quiz if the quiz has 7 multiple-choice questions, each having 4 answer choices?

Geometry B
12.3 Geometric Probability

Name _____

Hour _____ Date _____

<u>ASSIGNMENT</u>

Find the probability that a randomly chosen point lies inside the shaded region.

1.

2.

3.
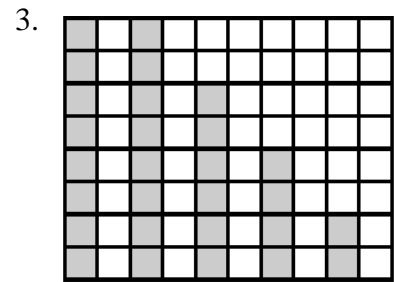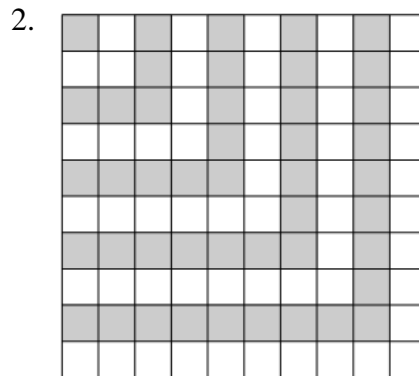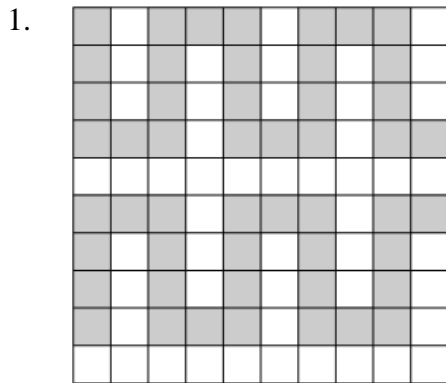
4.   Find the probability that a point randomly chosen inside the rectangle lies inside the triangle.
   Round to <u>2 decimal places</u>. **Show all calculations.**

14 cm

5 cm

12 cm

13 cm
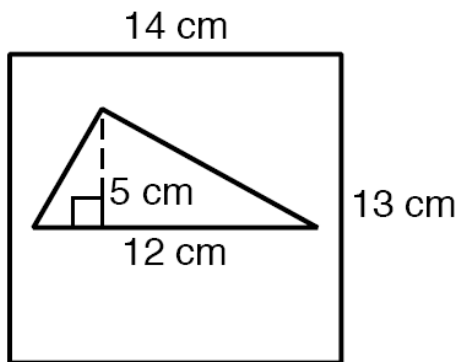
5.   Find the area of the yellow sector in the region below. The radius of the circle is 34 m.
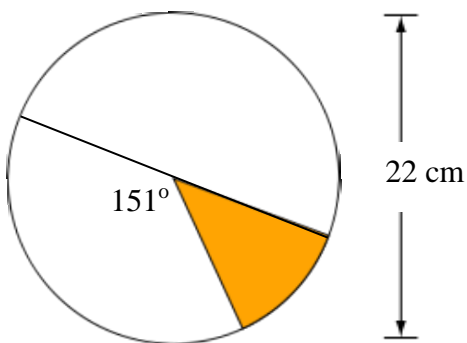   Round to <u>2 decimal places.</u> **Show all calculations.**

yellow   red

85° 100°

55° 40°
   80°   red

blue

blue
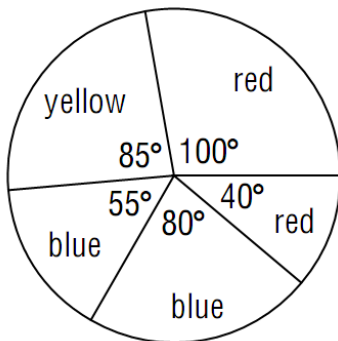
6.   Find the probability that a randomly chosen point in the circle lies in the shaded sector.
      Show all calculations.

106°

38 m
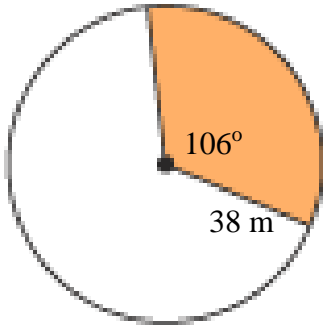
7.   Find the length of $\overset{\frown}{AB}$. Then, find the probability that a randomly chosen point in the circle lies in the shaded sector. The diameter of the circle is 14 cm. **Show all calculations.**

A

B

43°

O
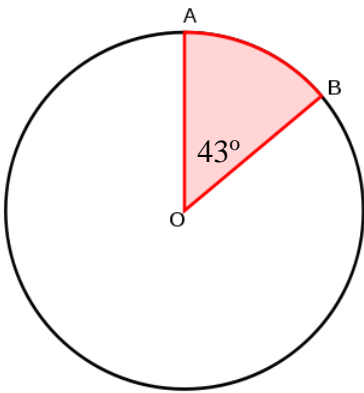
8.   Find the probability that a randomly chosen point in the circle lies in the shaded sector. Also, what is the central angle of the shaded sector. **Show all calculations.**

22 cm

151°

Geometry B   Name _____

12.4 Probabilities of Independent and Dependent Events   Hour _____ Date _____

A die is rolled three times. Find each probability.

1. P(three 4s)   2. P(no 4s)   3. P(2, then 3, then 1)

There are 3 nickels, 2 dimes, and 5 quarters in a purse. Three coins are selected in succession at random. Find the probability.

4. P(nickel, then dime, then quarter), if no replacement occurs

5. P(nickel, then dime, then quarter), if replacement occurs

6. P(3 dimes), if replacement occurs

7. P(3 dimes), if no replacement occurs

For #8 and 9, determine whether the events are *independent* or *dependent*. Then find each probability.

8. Serena is creating a painting. She wants to use 2 more colors. She chooses randomly from 6 shades of red, 10 shades of green, 4 shades of yellow, 4 shades of purple, and 6 shades of blue. What is the probability that she chooses 2 different shades of green?

9. Mike's mother is shopping at a bakery. The owner offers Mike a cookie form a jar containing 22 chocolate chip cookies, 18 sugar cookies, and 15 oatmeal cookies. Without looking, Mike selects on, drops it back in, and then randomly selects another. What is the probability that neither selection was a chocolate chip cookie?
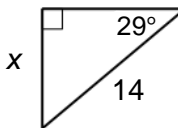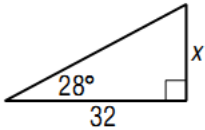
Review

10. Solve: $\dfrac{x+5}{4} = \dfrac{x-7}{2}$

11. Find the exact values of x and y in the triangles below.
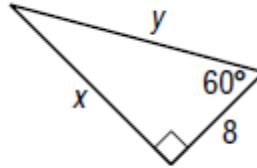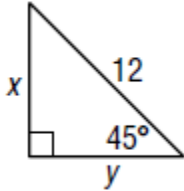
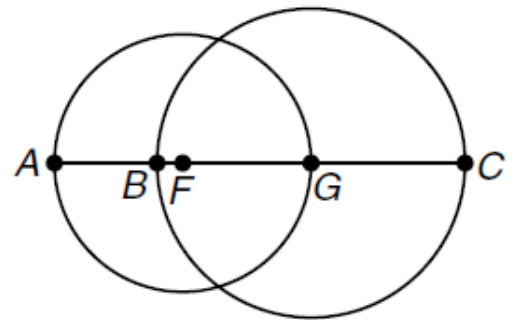12. Find x. Round to the nearest tenth.

13. The perimeter of a rectangle is 336 inches. The ratio of the length to the width is 9:5. Find the width of the rectangle.

14. The diameter of circle F is 7 inches and the diameter of circle G is 10 inches.

    a. Find *BF*.   b. Find *AB*.

8

<div align="center">**ASSIGNMENT**</div>

1. Determine whether the following events are mutually exclusive or not mutually exclusive.
    a. Drawing a jack or a heart from a standard deck of cards.

    b. Rolling a standard six-sided die and getting a 3 or an even number.

    c. Drawing a card from a standard deck and getting a 7 or an ace.

    d. Rolling a standard six-sided die and getting an even or a number divisible by 3.

2. Suppose you pick one card from a deck. Some mutually exclusive events are defined below:
        A: Pick an ace
        B: Pick a face card
        C: Pick an even numbered card
    Find each probability of each:
    a. P(A or B)

    b. P(A or C)

    c. P(B or C)

3. Suppose you draw one card from a deck. Some events are defined below:
        A: Draw a black card
        B: Draw a diamond
        C: Draw an even numbered card
        D: Draw an ace

    a. Find P(A or B).

    b. Find P(A or D).

    c. Find P(B or C).

4. Suppose you roll one die. Some events are defined below:

  A: Roll a number greater than 5

  B: Roll a number less than 3

 a. Find P(A).

 b. Find P(B).

 a. Find P(~B)

 b. Find P(A or B).

5. If you draw a Skittle candy at random from a bag of the candies, the candy you draw will have one of 5 colors. The table below gives the probability of each color for a randomly chosen Skittle candy.

Color	Red	Orange	Yellow	Green	Purple
Probability	0.27		0.32	0.14	0.13

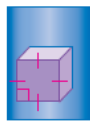 a. What is the probability of drawing an orange Skittle?

 b. What is the probability of drawing a Skittle that is not red?

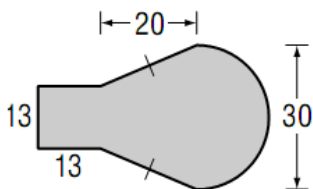 c. What is the probability of drawing a Skittle that is red, yellow, or purple?

 d. What is the probability that of drawing a Skittle that is not yellow or red?

Review

6. Identify the shape of the cross section shown in each solid.

7. Find the area of the figure below.

<div align="center">

ASSIGNMENT
</div>

A survey was conducted at a local college, asking students whether they are part-time or full-time. The results are shown in the table below. .

	Part-time	**Full-time**	**Total**
Male	26	74	
Female	38	94	
Total			

Suppose that the teacher randomly picks a student from the class. Some events are defined below:
- A: Student is male
- B: Student is female
- C: Student is part-time
- D: Student is full-time

a.   Find P(C)

b. Find P(A)

c.   Find P(D)

d. Find P(B)

e. Find the probability that a student is male, given that they are full-time

f. Find the probability that a student is full-time, given that they are male

g. Find the probability that a student is female, given that they are part-time

h. Find the probability that a student is part-time, given that they are female.

Michelle asks a random sample of 225 upperclassmen at his high school whether or not they plan to attend the prom. He finds that 73 seniors and 61 juniors plan to attend the prom, while 36 seniors and 55 juniors do not plan to attend. Organize these responses into a two-way frequency table. Then, use the table to answer some questions below.

	Attending	Not Attending	Total
Seniors			
Juniors			
Total			

1. How many juniors were surveyed?

2. How many of the students that were surveyed do not plan to attend the prom?

3. What is the probability that a selected student is a junior?

4. What is the probability that a selected student does not plan to attend prom?

5. What is the probability that a student does not plan to attend prom if we know they are a junior?

6. What is the probability that a student is a junior if we know they do not plan to attend prom?

7. Find the probability that a surveyed student is a junior given that he or she plans to attend the prom.

Review

Find the volume of the figures below.

2 ft
8 ft
6 ft

12.32 ft

16 mm   17.5 mm

12