Geometric Probability
Pre-AP Geometry

Name Key
Period 8 Date _____

EXPLORE/EXPLAIN

DEFINITION OF GEOMETRIC PROBABILITY = $\frac{\textit{Area of desired region}}{\textit{Area of total region}}$

I. Use this definition to find the probability of landing on each color (find as a percentage to the nearest tenth):

This is called Theoretical Probability.

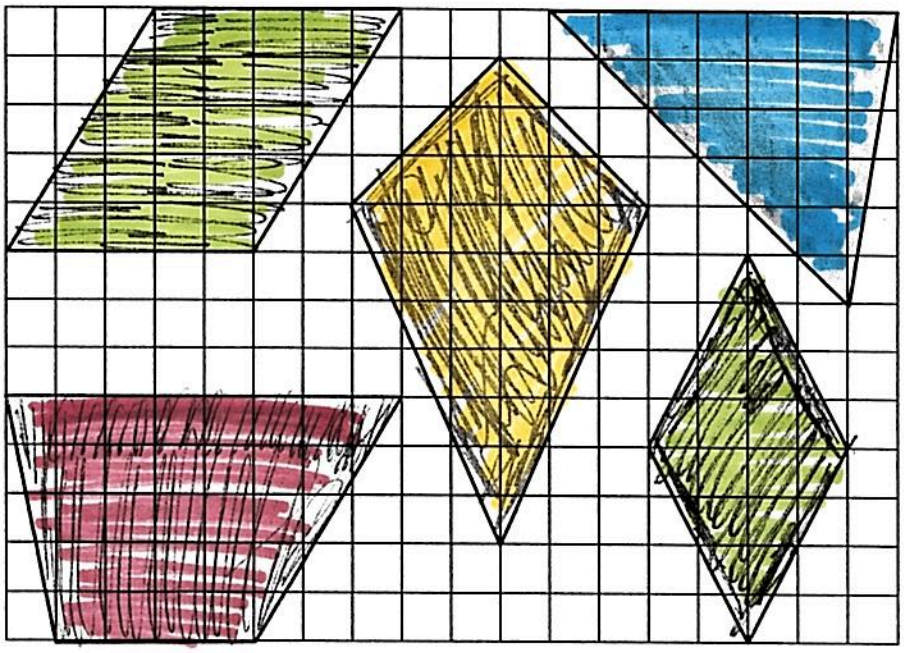
P(RED) = $\frac{30}{234}$ = 12.8%

P(GREEN) = $\frac{41}{234}$ = 17.5%

P(BLUE) = $\frac{21}{234}$ = 9%

P(YELLOW) = $\frac{30}{234}$ = 12.8%

P(WHITE) = 100 - 52.1 = 47.9%



II. Comparing Theoretical and Experimental Probability

You just found the theoretical probability for this sample space. Fill in the values from above to the table below.
Now we will do an experiment and see how often we actually land in the colored spaces. Calculate the experimental probability from the data (find as a percentage to the nearest tenth).

Experimental Probability = $\frac{\text{How many times landed in desired color}}{\text{How many times dart thrown}}$

	Theoretical Probability	Experimental Probability
Red	12.8	
Green	17.5	
Blue	9	
Yellow	12.8	
White	47.9	

1) Compare and contrast theoretical probability and experimental probability. What did you notice and why do think this occurred?

theoretical - what should ideally happen in a perfect world

experimental - what actually happens in real life

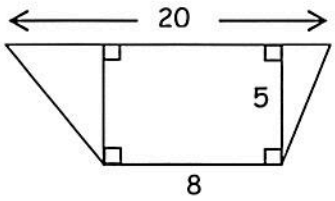
Geometric Probability
Pre-AP Geometry

Name Key
Period _____ Date _____

ust show all work for full credit!! Leave answers as simplified fractions.

Find the probability that a randomly chosen point in each of the following figures lies in the shaded region. Write the probability as a percent.

1.

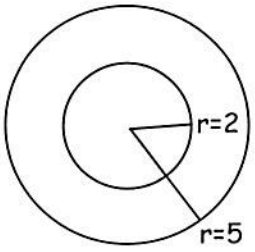


$A_{\square} = 8 \cdot 5 = 40$

$A_{trap} = \frac{1}{2} 5(20+8) = 70$

$\frac{40}{70} = \boxed{\frac{4}{7}}$ 57.1%

2.



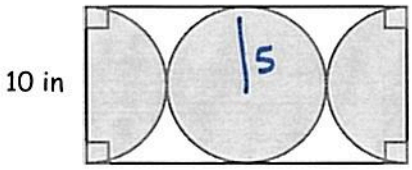
$A_{\odot} = \pi(2)^2$

$A_{\odot} = \pi(5)^2$

$\frac{4\pi}{25\pi} = \boxed{\frac{4}{25}}$

16%

3.

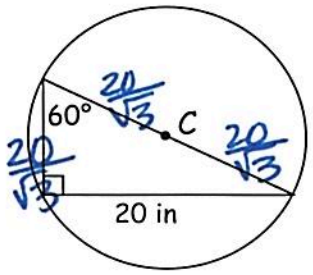


$A_{\odot} = \pi(5)^2 \cdot 2 = 50\pi$

$A_{\square} = 20 \cdot 10 = 200$

$\frac{50\pi}{200} = \boxed{\frac{\pi}{4}}$ 78.5%

4.



$A_{\odot} = \pi\left(\frac{20}{\sqrt{3}}\right)^2$

$A_{\odot} = \frac{400\pi}{3}$

$A_{\triangle} = \frac{1}{2}(20)\left(\frac{20}{\sqrt{3}}\right) = \frac{200}{\sqrt{3}}$

$A_{\triangle} = \frac{200\sqrt{3}}{3}$

$\frac{\frac{200\sqrt{3}}{3}}{\frac{400\pi}{3}} = \frac{200\sqrt{3}}{400\pi} = \boxed{\frac{\sqrt{3}}{2\pi}}$

27.6%

$\frac{115.47}{418.879}$