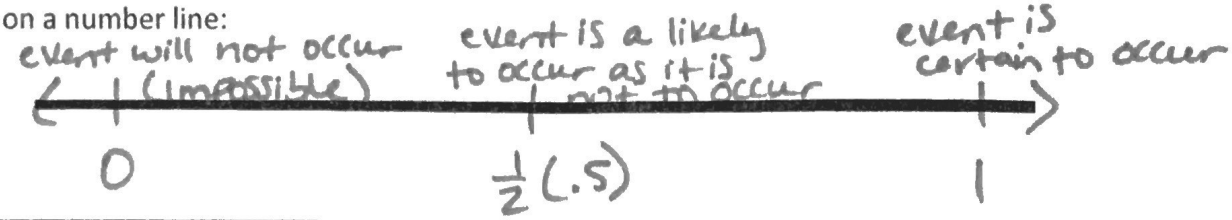
10.3 Simple Probability & "Or" Probability Notes Name: _____

Probability

- likelihood that an event will occur
- A number from 0 to 1 ← RANGE of Probability [0, 1]
- could be a % from 0% to 100%.

Probability on a number line:



And Versus *Or*:

- And: (∩) means multiply (then)
- Or: (∪) means add

Simple Probability Examples:

1) Find the probability of rolling a 5 on a die.

$\frac{1}{6}$

2) Find P(heads on a coin).

$\frac{1}{2}$

3) Find the probability of getting a red sock out of a dryer that holds 4 blue socks, 3 red socks, and 2 white socks.

$\frac{3}{9} = \frac{1}{3}$

4) Find the probability of rolling an even number on a die.

$\frac{3}{6} = \frac{1}{2}$

5) Find the probability of picking a heart from a deck of cards.

$\frac{13}{52} = \boxed{\frac{1}{4}}$

6) Find the probability of pick a Jack from a deck of cards.

$\frac{4}{52} = \boxed{\frac{1}{13}}$

Complement of Probability Examples:

7) What is the complement of rolling a 5 on a die?

$1 - \frac{1}{6} = \frac{5}{6}$

8) What is P(5 on a die)?

$1 - \frac{1}{6} = \frac{5}{6}$

Overlapping Probability: Be sure to SUBTRACT the overlapping parts!

Overlapping Card Probability Examples:

9) Find P(red card or heart in a deck of cards).

$\frac{26}{52} + \frac{13}{52} - \frac{13}{52} = \frac{26}{52} = \boxed{\frac{1}{2}}$

10) Find the probability of getting a face card or a spade in a deck of cards.

$\frac{12}{52} + \frac{13}{52} - \frac{3}{52} = \frac{22}{52} = \boxed{\frac{11}{26}}$

The number cube sum chart:

* When we talk about rolling 2 dice!

	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

36 possible sums

11) What is the probability of getting a sum of 5 or an odd sum on a pair of two number cubes?

$\frac{4}{36} + \frac{18}{36} - \frac{4}{36} = \frac{18}{36} = \frac{1}{2}$

12) Find P(number less than 4 or multiple of 2).

$\frac{3}{36} + \frac{18}{36} - \frac{1}{36} = \frac{20}{36} = \frac{5}{9}$

13) Find P(sum of 5 or multiple of 5).

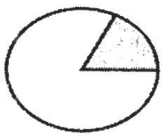
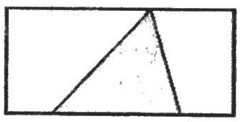
$\frac{4}{36} + \frac{7}{36} - \frac{4}{36} = \frac{7}{36}$

14) Find P(sum less than 10 or an even sum).

$\frac{30}{36} + \frac{18}{36} - \frac{14}{36} = \frac{34}{36}$ $\frac{1}{18}$

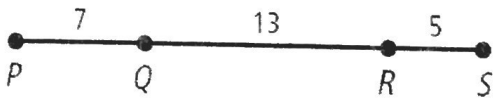
$1 - \frac{34}{36} = \frac{2}{36}$

Geometric Probability

Model	Length	Angle Measure	Area
Example			
Sample space	All points on AD	All points in the circle	All points in the rectangle
Event	All points on BC	All points in the shaded region	All points in the triangle
Probability	$P = \frac{BC}{AD}$	$P = \frac{\text{measure of angle}}{360°}$	$P = \frac{\text{area of triangle}}{\text{area of rectangle}}$

Examples:

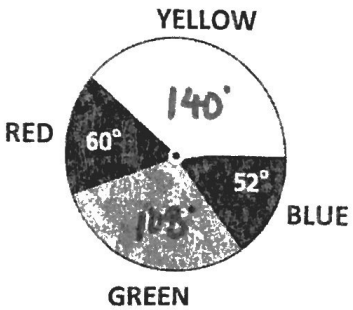
Directions: A point is chosen randomly on $\overline{PS}$. Find the probability of each event.



1) The point is on $\overline{RS}$. $\frac{5}{25} = \boxed{\frac{1}{5}}$

2) The point is not on $\overline{QR}$. $\boxed{\frac{12}{25}}$

Directions: Use the spinner to find the probability of each event.



3) the pointer landing on yellow $\frac{140}{360} = \frac{7}{18}$

4) the pointer landing on blue or red $\frac{60}{360} + \frac{52}{360} = \frac{112}{360} = \frac{14}{45}$

5) the pointer not landing on green $\frac{252}{360} = \frac{7}{10}$