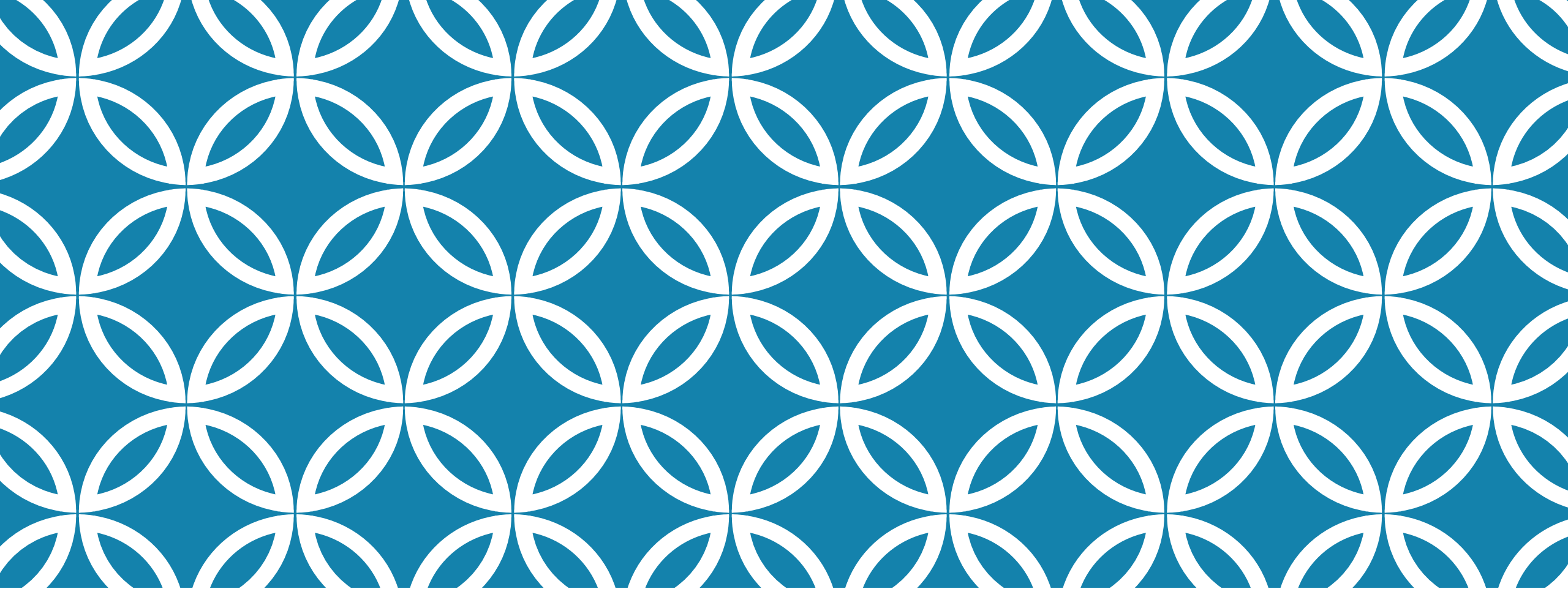


DO NOW

1. Fill in the foldable and tape/glue into your notebook
2. Complete the worksheet titled “Intersection and Union of Sets Using U Worksheet 1”
3. Turn it in to be checked when finished.



1.2 BASIC PROBABILITY & EXPERIMENTAL PROBABILITY

SWBAT decide if a specified model is consistent with results from a given data-generating process (S-IC.2) and evaluate reports based on data (S-IC.6)

THEORETICAL PROBABILITY OF EVENTS

$$P(E) = \frac{\text{Number of Favorable Outcomes}}{\text{Total Number of Outcomes}}$$

$P(A^C)$ is every outcome **except (or not)** A , so we can find $P(A^C)$ by finding $1 - P(A)$

An experiment consists of tossing three coins.

1. List the sample space for the outcomes of the experiment.

$\{HHH, HHT, HTH, HTT, THH, THT, TTH, TTT\}$

Find the following probabilities:

2. P(all heads)

$1/8$

3. P(two tails)

$3/8$

4. P(no heads)

$1/8$

5. P(at least one tail)

$7/8$



6. How could you use complements to find d ?

The complement of at least one tail is no tails, so you could do $1 - P(\text{no tails}) = 1 - 1/8 = 7/8$

A bag contains six red marbles, four blue marbles, two yellow marbles and 3 white marbles. One marble is drawn at random.

7. List the sample space for this experiment.

$\{r, r, r, r, r, r, b, b, b, b, y, y, w, w, w\}$

Find the following probabilities:

8. P(red)

$$6/15 = 2/5$$

9. P(blue or white)

$$7/15$$

10. P(not yellow)

$$13/15$$

(Note that we could either count all the outcomes that are not yellow or we could think of this as being $1 - P(\text{yellow})$. Why is this?)

A card is drawn at random from a standard deck of cards.
Find each of the following:

1 1. P(heart)

$$13/52 \text{ or } 1/4$$

1 2. P(black card)

$$26/52 \text{ or } 1/2$$

1 3. P(2 or jack)

$$8/52 \text{ or } 2/13$$

1 4. P(not a heart)

$$39/52 \text{ or } 3/4$$

EXPERIMENTAL PROBABILITY

$$P(E) = \frac{\text{Number of Occurrences}}{\text{Total Number of Trials}}$$

15. BASED ON THE TRIALS, WHAT IS
 $P(\text{ROLLING } \# < 3)$

Number	1	2	3	4	5	6
Frequency	5	6	9	2	4	8

$$P(\text{rolling } \# < 3) = 11/34$$

ODDS

The **odds** of an event occurring are equal to the ratio of **favorable outcomes** to **unfavorable outcomes**.

$$\text{Odds} = \frac{\text{Favorable Outcomes}}{\text{Unfavorable Outcomes}}$$

The weather forecast for Saturday says there is a 75% chance of rain. What are the odds that it will rain on Saturday?

16. What does the 75% in this problem mean in context of the situation?

Out of 100 Saturdays with similar conditions, 75 had rain.

17. The favorable outcome in this problem is that it rains:

75 favorable outcomes, 25 unfavorable outcomes

$$\text{Odds(rain)} = 75/25 \text{ or } 3/1$$

18. Should you make outdoor plans for Saturday?

10. What are the odds of drawing an ace at random from a standard deck of cards?

$$\begin{aligned}\text{Odds(ace)} &= 4/48 \\ &= 1/12\end{aligned}$$

CHECK YOUR UNDERSTANDING:

SWBAT decide if a specified model is consistent with results from a given data-generating process (S-IC.2) and evaluate reports based on data (S-IC.6)

Complete the Celebrity Hunger Games Experiment & Turn in

PRACTICE WORKSHEET ANSWERS

1. $16/52$ or $4/13$
2. $1/52$
3. $1/4$
4. $5/16$
5. $11/16$
6. 0
7. $9/16$
8. $4/12 = 1/3$

PRACTICE ANSWERS CONT.

9. $12/4 = 3/1$

10. $6/12 = 1/2$

11. $5/12$

12. $4/12 = 1/3$

13. $3/12 = 1/4$

14. $0.5/4 = 0.125 = 12.5\%$

15. $0.17/4 = 0.0425 = 4.25\%$

16. $0.04/4 = 0.01 = 1/100 = 1\%$

17. $273/1136 = 0.24 = 24\%$