Lesson 5.2 Experimental Probability of Simple Events

Day 1
Teach objective and review unit "Reading strategies" and "Success for English learners"
Assignment - Guided practice and Independent practice completed as a class

Reading strategies answers

1. 3; there is more 3's than any other number
2. 1; there is only one 1.
3. No; I predicted the cube would land on 1 the least number of times.
4. No; I predicted the cube would land on 3 most often.

Success for English learners

1. A. 28, B. 40, c. 28/40 or 7/10
2. 18/52 or 9/26; 1 – 9/26 = 17/26
3. I tossed a coin 30 times. It landed on heads 18 times. What is the experimental probability the coin will land on heads on the next toss? 18/30 or 3/5

Day 2
Review
Cooperative (elbow buddy)assignment 5.2 practice and problem solving: D
5.2 Practice and problem solving: A/B

Login to Go Math
Go to the Resources Tab
Click on the Student Online Edition (yellow open book)
This will take you to another window to an interactive student edition textbook.

Go to page 163

Answers to "reflect", Explore activity" and "your turn" questions

EA.

1. On its side.
2. The cup is most likely to land on its side. It's somewhat likely to land open-end down. It is unlikely to land open end up.
3.
4. The probability of the cup landing on its side would increase
5. The sum equals 1
6. You could add the frequencies for blue, green, and yellow and then find the ratio of those frequencies to the total number. You could also use the complement and subtract the probability of red from 1.
7. Red 1/3, yellow 7/15, blue 1/5

8. Let 1/2 represent red, 3/4 – white and 5/6 – blue.

For answers to the guided practice and independent practice, see Coach Gammon.

Additional web sites

https://learnzillion.com/lessons/1348-find-the-experimental-probability-by-creating-a-ratio

http://www.teachertube.com/video/theoretical-experimental-probability-36376

Remember, on the online edition, you can click on the "math on the spot" for a little extra teaching from Prof Burger. If you only have your book, use a QR scanner on the "math on the spot"

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Lesson 5-2

TEKS 7.6.I
7.4.A
7.6.B
7.6.C
7.1.F

Experimental Probability of Simple Events

Q: How do you find the experimental probability of a simple event?
A:

Vocab

1. _____ The ratio of a number of times an event occurs to the total number of trials, or times that the activity is performed
2. _____ An event consisting of only 1 outcome.
3. _____ A model of an experiment that would be difficult or inconvenient to actually perform.

A: _____ an experiment several times, _____ a ratio of the number of _____ outcomes to the total number of times the experiment was conducted.

The Key to experimental probability is _____ based on events that have _____ _____.

A baseball team has a batting average of 0.250 so far this season. This means that the team's players get hits in 25% of their chances at bat. Use a simulation to predict the number of hits the team's players will have in their next 34 chances at bat.

Since the team has 34 chances at bat, you must draw a card 34 times.

STEP 1 Choose a model.

Batting average $= 0.250 = \frac{250}{1{,}000} = \frac{1}{4}$

A standard deck of cards has four suits, hearts, diamonds, spades, and clubs. Since $\frac{1}{4}$ of the cards are hearts, you can let hearts represent a "hit." Diamonds, clubs, and spades then represent "no hit."

STEP 2 Perform the simulation.

Draw a card from the deck, record the result, and put the card back into the deck. Continue until you have drawn and replaced 34 cards in all.

(H = heart, D = diamond, C = club, S = spade)

H D D S H C H S D H C D C C D H H
S D D H C C H C H H D S S S C H D

STEP 3 Make a prediction.

Count the number of hearts in the simulation.

Since there are 11 hearts, you can predict that the team will have 11 hits in its next 34 chances at bat.

Lesson 5-2

TEKS 7.6.I
7.6.A
7.6.B
7.6.C
7.1.F

Experimental Probability of Simple Events

Q: How do you find the experimental probability of a simple event?
A:

Experimental Probability is only an estimate

Vocab

1. Experimental probability — The ratio of a number of times an event occurs to the total number of trials, or times that the activity is performed
2. Simple event — An event consisting of only 1 outcome.
3. Simulation — A model of an experiment that would be difficult or inconvenient to actually perform.

A: Repeat an experiment several times, Write a ratio of the number of Succesful outcomes to the total number of times the experiment was conducted.

The Key to experimental probability is always based on events that have already occured.

A baseball team has a batting average of 0.250 so far this season. This means that the team's players get hits in 25% of their chances at bat. Use a simulation to predict the number of hits the team's players will have in their next 34 chances at bat.

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H D D S H C H S D H C D C C D H H
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Count the number of hearts in the simulation.

Since there are 11 hearts, you can predict that the team will have 11 hits in its next 34 chances at bat.

Name _____ Date _____ Class _____

LESSON 5-2

Experimental Probability of Simple Events

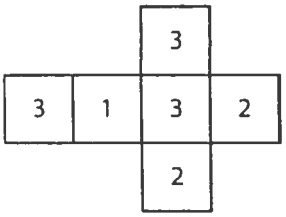
Reading Strategies: Make Predictions

Experimental probability is a ratio. The ratio compares the number of times an event occurs to the total number of trials.

A trial is the number of times that an experiment is carried out or an observation is made.

$$\text{Experimental probability} \approx \frac{\text{number of times a favorable event happens}}{\text{total number of trials}}$$

The net of a number cube is shown below. Use the net to complete Exercises 1–2.



1. Predict which number you will land on most often. Explain.

_____

2. Predict which number you will land on least often. Explain.

_____

Actual events in an experiment may or may not match your prediction. The table shows the outcomes of tossing the above number cube 100 times

Outcome	1	2	3
Number of Tosses	39	28	33

Use the table to complete Exercises 3–4.

3. Did your prediction for landing on 1 match the outcome shown in the table? Explain.

_____

4. Did your prediction for landing on 3 match the outcome shown in the table? Explain.

_____

Name _____ Date _____ Class _____

LESSON 5-2

Experimental Probability of Simple Events

Success for English Learners

Problem 1

Nikos flipped a coin 10 times. It landed heads up 6 times.

What is the experimental probability that the coin will land heads up on the next toss?

$$\text{Experimental probability} \approx \frac{\text{number of times a favorable event happens}}{\text{total number of trials}}$$

$$\text{Experimental probability} \approx \frac{6}{10} \approx \frac{3}{5}$$

favorable event: the outcome you want

total number of trials: how many times the coin was tossed

Problem 2

Nikos flipped the coin 20 times. It landed tails up 11 times.

What is the experimental probability that the coin will **not** land tails up on the next toss?

$$\text{Experimental probability (tails)} \approx \frac{11}{20}$$

$$\text{Experimental probability (not tails)} \approx 1 - \frac{11}{20} \approx \frac{9}{20}$$

1. Marco counted 40 cars in the parking lot. 28 were silver. What is the experimental probability that the next car in the lot will be silver?

   a. What is the number of events? _____

   b. What is the number of trials? _____

   c. What is the experimental probability that the next car in the parking lot will be silver?

   _____

2. Janine flipped a coin 52 times. The coin landed heads up 18 times. What is the experimental probability that the coin will land tails up on the next flip?

   _____

3. Write your own experimental probability problem. Give the answer.

   _____

   _____

   _____

Name _____ Date _____ Class _____

LESSON 5-2

Experimental Probability of Simple Events

Practice and Problem Solving: D

Find each experimental probability. The first one is done for you.

1. Kathy played a game of darts. She threw 15 darts and hit the target 9 times. What is the experimental probability that Kathy will hit the target the next time she throws a dart?

   a. What is the number of favorable outcomes? **9**

   b. What is the total number of trials? **15**

   c. What is the experimental probability that Kathy will hit the target the next time she throws a dart?

   $$\frac{9}{15} = \frac{3}{5}$$

2. Between 10 A.M. and 11 A.M., 48 people came into Brad's store. 40 of them made a purchase. What is the experimental probability that the next person to come into the store will make a purchase?

   a. What is the number of favorable outcomes? _____

   b. What is the total number of trials? _____

   c. What is the experimental probability the next person to come into the store will make a purchase?

3. Sharona kept track of the colors of cars that passed her house one afternoon. She collected her data in the table below.

Car Color	Number	Car Color	Number
red	12	white	42
blue	9	silver	36
black	32	yellow	1

   What is the experimental probability that the next car will be silver?

   a. What is the number of favorable outcomes? _____

   b. What is the total number of trials? _____

   c. What is the experimental probability that the next car to pass Sharona's house will be silver?

   d. What is the experimental probability that the next car to pass Sharona's house will **not** be silver?

Name _____ Date _____ Class _____

LESSON 5-2

Experimental Probability of Simple Events

Practice and Problem Solving: A/B

Solve.

1. Jolene is playing basketball. She scored 11 baskets in 15 free throws. What is the experimental probability that she will score a basket on her next free throw?

_____

2. Sarah has gone to work for 60 days. On 39 of those days, she arrived at work before 8:30 A.M. On the rest of the days she arrived after 8:30 A.M. What is the experimental probability she will arrive after 8:30 A.M. on the next day she goes to work?

_____

3. For the past four weeks, Micah has been recording the daily high temperature. During that time, the high temperature has been greater than 45°F on 20 out of 28 days. What is the experimental probability that the high temperature will be below 45°F on the twenty-ninth day?

_____

4. After the movie, 99 out of 130 people surveyed said they liked the movie.
   a. What is the experimental probability that the next person surveyed will say he or she liked the movie?

   _____

   b. What is the experimental probability that the next person surveyed will say he or she did not like the movie?

   _____

Find each experimental probability. Write your answer as a fraction, as a decimal, and as a percent.

5. For the past 40 days, Naomi has been recording the number of customers at her restaurant between 10:00 A.M. and 11:00 A.M. During that hour, there have been fewer than 20 customers on 25 out of the 40 days.
   a. What is the experimental probability there will be fewer than 20 customers on the forty-first day?

   _____

   b. What is the experimental probability there will be 20 or more customers on the forty-first day?

   _____