Warm Up

Date: Mar 12

Ch. 7 Lesson 8

Test Review

Day 2

a)What is the theoretical probability that Devon spins a '2' ? $P(2) = \frac{\#\text{of } 2}{\text{Total}} = \frac{3}{7}$

b) Which number has an equal chance of being chosen? ?

$P(1) = \frac{\#\text{of } 1}{\text{total}} = \frac{3}{7}$ $P(3) = \frac{\#\text{of } 3}{\text{Tot}} = \frac{1}{7}$

1 and 2 have the same chance of being chosen since their probability are the same

c) Sam spun the spinner 50 times. Here is his results:

Spun a 1--> 21 times, Spun a 2 -->24 times, Spun a 3-->5 times

$P(2 \text{ or } 3) = \frac{\#\text{of 2 or 3 spun}}{\text{Total spins}} = \frac{29}{50}$

2) Which graph would you use and why (If line would it be connected)

a) Favorite sports of students — Comparing different sports use bar graphs.

b) Height of John from birth to 5 years old

→ Change in height over time so use a line graph.

Connect since you can have part of height and years.

c) Number of students in grade 8 from

Page 278-279 #1, 2, 3

1) a) Possible outcomes are win, lose and spin again

1b) Possible outcomes are rec, black, blue

1c) Possible outcomes are 1,2,3

2a) If he tossed it 20 times and heads showed 12 times then tails is 20 - heads

20 - 12

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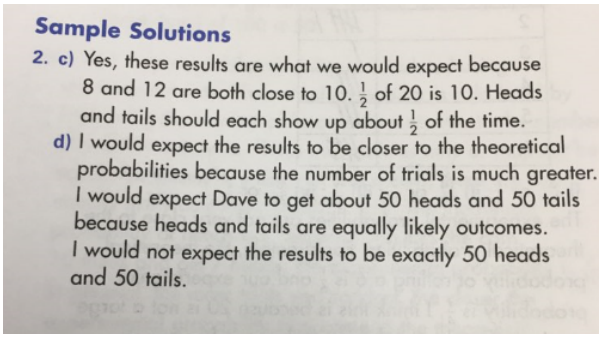
So tails showed 8 times

2b) Experimental probability

$$p(\text{head}) = \frac{\#\text{ head tallied}}{\text{Total tries}} = \frac{12}{20} = \frac{3}{5}$$

$$p(\text{tails}) = \frac{\#\text{ tails tallied}}{\text{Total tries}} = \frac{8}{20} = \frac{2}{5}$$



Sample Solutions

2. c) Yes, these results are what we would expect because 8 and 12 are both close to 10. $\frac{1}{2}$ of 20 is 10. Heads and tails should each show up about $\frac{1}{2}$ of the time.

d) I would expect the results to be closer to the theoretical probabilities because the number of trials is much greater. I would expect Dave to get about 50 heads and 50 tails because heads and tails are equally likely outcomes. I would not expect the results to be exactly 50 heads and 50 tails.

3a) Avil spun the pointer 24 times (i counted the tally marks)

b) $$p(\text{blue}) = \frac{\#\text{ blue tallied}}{\text{Total tries}} = \frac{17}{24}$$

$$p(\text{orange}) = \frac{\#\text{ orange tallied}}{\text{Total tries}} = \frac{7}{24}$$

c) Theoretical

$$p(\text{blue}) = \frac{\#\text{ blue}}{\text{Total}} = \frac{3}{4} = \frac{18}{24}$$

$$p(\text{orange}) = \frac{\#\text{ orange}}{\text{Total}} = \frac{1}{4} = \frac{6}{24}$$

These are close to the above probabilities, so results are as expected.

1. Each questions (written in italics) can be improved.

*Write a better question for each.

*Explain why you think it is better.

Ex) To discover how many people in their class enjoys certain tv shows.

Do you watch The Simpsons or Family Guy?

since it is for certain tv shows we need more options

What shows do you like to watch:

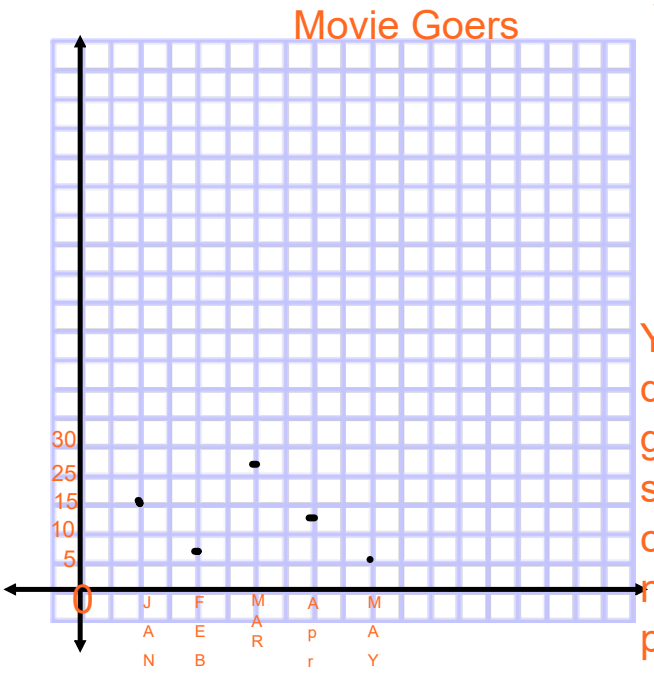
Simpson, Family Guy or Other____

2)Given data in a chart, you must do the following

Ex) Kim recorded the number of times her classmates went to the theater for the first 5 months. Below is the data

Month	# of time to theater
Jan	15
Feb.	6
March	26
April	12
May	5

> Use grid paper. Draw a graph to show this data
> Explain why you choose this graph
> Make 2 conclusions about the graph



You can draw a bar graphs since it is comparing different months

You can draw a line graph since it is change of number of people at movies during different months

2 Conclusions is March is the most popular month

May is the least popular for movie goers in the class

Review notes on which graphs to use (choosing graphs) and when to connect dots or leave as dots

3. (Fred surveyed the middle school students to answer this question(His data is below)
   What pet do you have at home?

   This table show the data she collected.

Subject	Number of students
Dog	50
Cat	45
Fish	22
hamster	20
other	15

a. What type of graph would you choose for this data
b. Why would you choose this graph type over others?

You can draw a bar graphs since it is comparing different types of pets students have

You cannot choose a line graph because it is not a change of 1 item over time

4) Theoretical probability

Ex) Include probability statements or full value will not be granted. Reduce Fractions

Kevin places 6 yellow, 5 green, 2 blue, and 7 red tiles in a bag. He picks one tile without looking. What is the theoretical probability of drawing each color?

p(yellow) = # yellow = 6 = 3
Total 20 10

p(green) = # green = 5 = 1
Total 20 4

p(blue) = # blue = 2 = 1
Total 20 10

p(red) = # red = 7
Total 20

Ex2) Given a spinner what is the probability of choosing a certain sector. (list the possible outcomes, find the theoretical probability of outcome)

5) Experimental probability

Ex) Jim actually tosses a coin 50 times and he recorded that heads showed up 27 times.

1. How many times did tails show up? 50- 27 = 23 Tails
2. Is the probability of landing on heads close to the theoretical probability?
3. If he tossed the coin 100 times what would you think the probability of landing on heads would be? And why?

p(Heads) = # heads tossed = 27
Total tossed 50

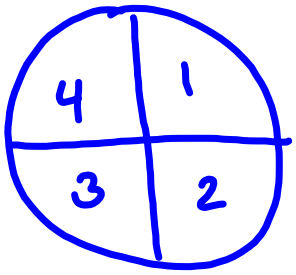
p(tails) = # Tails tossed = 23
Total tossed 50

p(Heads) = # heads on coin = 1 = 50
Total on coin 2 x 100 = 25/50

6) Know that to determine if a game is fair, one must have equal opportunity to win as to loose.

(Given an example of a game you will have to find the probability of each outcome and determine if the game is fair)

In order to be fair the probability to win is the same or close to the probability to lose



RECALL Two types of Probability

Theoretical Probability - is what is expected to happen based on theory of math. Use a formula.

$$P(\text{event}) = \frac{\text{\# of favorable outcomes}}{\text{Total \# of possible outcomes}}$$

Ex) P(head on coin) = $\frac{\text{\# of heads}}{\text{Total sides of coin}} = \frac{1}{2}$

TODAY

Experimental Probability - is found by repeating an experiment and observing the outcomes.

$$P(\text{event}) = \frac{\text{number of times event occurs}}{\text{total number of trials}}$$

Example:
A coin is tossed 10 times:
A head is recorded 7 times
and a tail 3 times.

$$P(\text{head}) = \frac{7}{10}$$

$$P(\text{tail}) = \frac{3}{10}$$

Page 278-279 #4 abcd

Not just the answer. Write the probability statement

(Reduce Fractions)

Test Tomorrow

Page 284 - 285 #1a,#3abc, #4abcd, #5, #7. #8a, #8b

Did with Supply teacher Feb 18

Do today

4. Nina and Allegra placed 35 red tiles and 15 yellow tiles in a bag. At random, they picked a tile from the bag, recorded its colour, and replaced it. They did this 100 times.
   a) What is the theoretical probability of picking a red tile? $\frac{35}{50}$, or $\frac{7}{10}$
   b) Predict how many times Nina and Allegra should get a red tile in 100 trials. About 70 times
   c) Nina and Allegra picked a red tile from the bag 58 times. What is the experimental probability of picking a red tile? $\frac{58}{100}$, or $\frac{29}{50}$
   d) Nina said, "I think we did something wrong." Do you agree? Why?
   e) Work with a partner. Try the experiment. Record your results. What is your experimental probability of picking a red tile?

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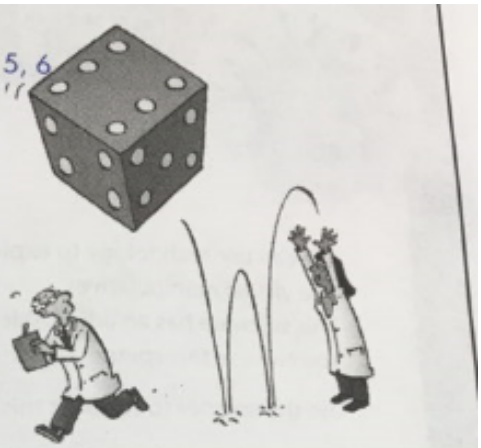
4. d) No, I do not agree that they did something wrong. There are often differences between experimental results and theoretical probabilities. These differences can occur because of chance. They do not necessarily mean a mistake has been made. More trials should be conducted to get closer to the theoretical probability.
   e) We drew 77 red tiles and 23 yellow tiles in 100 trials. So, the experimental probability of picking a red tile is $\frac{77}{100}$.
5. c) 6, 2, 6, 5, 2, 3, 4, 5, 1, 2, 5, 6, 2, 6, 2, 6, 4, 4, 1, 2

Number Rolled	Tally
1	//
2	𝍸 /
3	/
4	///
5	///
6	𝍸

i) $\frac{5}{20}$, or $\frac{1}{4}$; ii) $\frac{14}{20}$, or $\frac{7}{10}$; iii) $\frac{9}{20}$; iv) $\frac{8}{20}$, or $\frac{2}{5}$

The experimental probabilities are not very close to the theoretical probabilities. For example, the theoretical probability of rolling a 6 is $\frac{1}{6}$ and our experimental probability is $\frac{1}{4}$. I think this is because 20 is not a large number of trials and the results happen by chance.

5. A die labelled 1 to 6 is rolled.
a) What are the possible outcomes? 1, 2, 3, 4, 5, 6
b) What is the theoretical probability of each outcome?
i) rolling a 6 $\frac{1}{6}$
ii) rolling an even number $\frac{3}{6}$, or $\frac{1}{2}$
iii) rolling a 2 or a 4 $\frac{2}{6}$, or $\frac{1}{3}$
iv) rolling a number greater than 4 $\frac{2}{6}$, or $\frac{1}{3}$
c) Work with a partner. Roll a die 20 times. Record your results.
What is the experimental probability of each outcome in part b?
How do these probabilities compare with the theoretical probabilities? Explain.
d) Combine your results with those of 4 other groups.
What is the experimental probability of each outcome in part b?
How do these probabilities compare with the theoretical probabilities? Explain.
What do you think might happen if you rolled the die 500 times?



5. c) 6, 2, 6, 5, 2, 3, 4, 5, 1, 2, 5, 6, 2, 6, 2, 6, 4, 4, 1, 2

Number Rolled	Tally
1	//
2	//// /
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4	///
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6	////

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The experimental probabilities are not very close to the theoretical probabilities. For example, the theoretical probability of rolling a 6 is $\frac{1}{6}$ and our experimental probability is $\frac{1}{4}$. I think this is because 20 is not a large number of trials and the results happen by chance.

d) $\frac{23}{100}$; $\frac{60}{100}$; $\frac{37}{100}$; $\frac{36}{100}$

These results are closer to the theoretical probabilities. For example, $\frac{1}{3}$ of 100 is about 33, which is close to our experimental results: we rolled a two or a four 37 times and a number greater than four 36 times. If we rolled the die 500 times, I think the experimental probabilities and the theoretical probabilities would be quite close, but I don't think they would be exactly the same.

6. Zeroun and Ammon are playing a game.
They spin the pointer on this spinner.
If the pointer lands on an even number, Zeroun wins.
If the pointer lands on an odd number, Ammon wins.

a) Is this a fair game? How do you know?
b) What is the theoretical probability of the pointer landing on an even number? $\frac{5}{10}$, or $\frac{1}{2}$
c) Use a spinner like this one.
Play the game at least 30 times.
Record your results.
Were the results what you expected? Explain.
d) What results would you expect if you played the game 100 times? Explain how you made your prediction.

6. a) Yes; the game is fair. There are 10 congruent sectors. Five have an even number and 5 have an odd number.
c) I expected to get an even number 15 times because $\frac{1}{2}$ of 30 is 15. The results were not what I expected. In 30 trials, the pointer landed on an even number 21 times and on an odd number 9 times.
d) I would expect to get an odd number about 50 times. I know that $\frac{1}{2}$ of 100 is 50.

Practice

1. For each experiment, state the possible outcomes.
   a) The spinner has 3 equal sectors labelled Win, Lose, Spin Again. The pointer on a spinner is spun.
   b) A bag contains 6 marbles: 3 red, 2 black, and 1 blue. One marble is picked at random.
   c) A regular tetrahedron has 4 faces labelled 1, 2, 2, 3. The tetrahedron is rolled.

TIP

2. Dave tossed a coin 20 times. Heads showed 12 times.
   a) How many times did tails show?
   b) What fraction of the tosses showed heads? Tails?
   c) Are these results what you would expect? Explain.
   d) Dave tosses the coin 100 times. What would you expect the results to be? Explain.

3. Avril spins the pointer on this spinner several times.
Here are her results.

Blue	Orange
𝍸 𝍸 𝍸 ||	𝍸 ||

a) How many times did Avril spin the pointer?
How do you know?
b) What fraction of the spins were blue? Orange?
c) Were Avril's results what you would have expected? Explain.

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a) What is the theoretical probability of picking a red tile?
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5. A die labelled 1 to 6 is rolled.

   a) What are the possible outcomes?
   b) What is the theoretical probability of each outcome?
      i) rolling a 6
      ii) rolling an even number
      iii) rolling a 2 or a 4
      iv) rolling a number greater than 4
   c) Work with a partner. Roll a die 20 times.
      Record your results.
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   b) What is the theoretical probability of the pointer landing on an even number?
   c) Use a spinner like this one.
      Play the game at least 30 times.
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