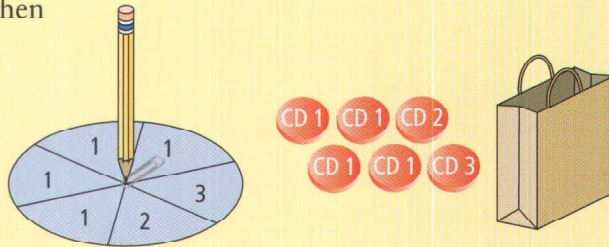


5.40 - Questions Handout #s 1 - 10

Key Ideas

- A simulation models a real-life situation when you cannot easily predict the outcomes.
- A real-life situation can be simulated in many different ways. Ensure that the number of possible outcomes of the simulation matches the number of outcomes of the real situation.



Communicate the Ideas

1. Why is a simulation helpful in a problem like Yo Sep's?
2. Yo Sep used a spinner to simulate collecting all three music CDs. What other methods might he have used?
3. Yo Sep found that he would have to "buy" eight boxes of cereal to get all three CDs. Is it fair to say that every person who purchases eight boxes of cereal will collect all three CDs? Justify your reasoning.

Check Your Understanding

Practise

For help with questions 4 and 5, refer to the Example.

4. The tally chart shows the results of a spinner simulation.

Letter	Tally
M	
U	
S	
I	
C	

- a) How many spins were needed to get all five letters?
- b) Which letter was last? How do you know?

5. The tally chart shows the results of a number cube simulation.

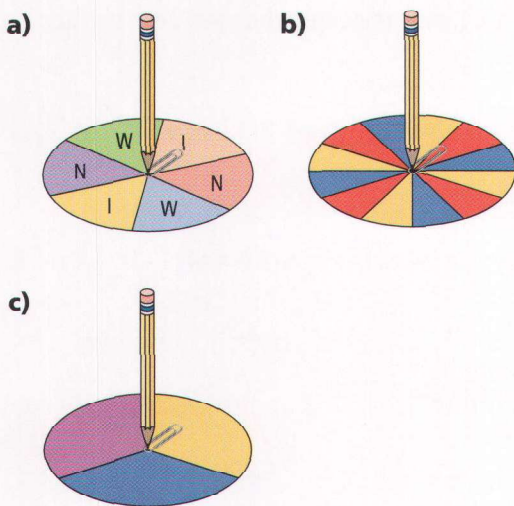
Number	Tally
1	
2	
3	
4	
5	###
6	

- a) How many rolls were needed to get all six numbers?
- b) Which numbers could have been last? Explain your reasoning.

6. Describe an item that could be used to simulate each situation. Explain why each item is appropriate.
- Choose one of two DVD movies.
 - Choose a sundae topping at random from eight choices.
 - Win a free music CD by collecting letters from pop bottle caps to spell C-A-P.

Apply

7. Inside the wrapper of a chocolate bar is a letter. You win if you collect W, I, and N. Explain how each spinner could be used to simulate this contest.



8. Describe a situation that can be simulated using each method.
- flipping a coin
 - rolling an odd number on a number cube
 - picking a certain coloured marble from a bag of 5 green, 2 red, and 3 yellow marbles
 - picking a certain card from a deck of 52 cards

9. In the Example, Yo Sep used a six-section spinner to simulate buying cereal boxes to get three CDs. Suppose another CD is added. For every four copies of CD 1, there is one each of CD 2, CD 3, and CD 4.
- How many boxes might he have to “buy” to get all four CDs?
 - Design and conduct a simulation for the situation.
 - Compare your prediction with the simulation. Explain your results.



10. During the holiday season, the number of customers in stores increases. On average, 100 people enter the store every hour. 50% are women, 30% are men, and the rest are children.

- Predict who the next 20 customers will be.
- Design and conduct a simulation for the situation.
- Compare your prediction with the simulation. Explain your results.

Extend

11. A letter is printed on the inside of a water bottle cap. To win the contest, participants must collect the letters to spell Y-O-U-W-I-N. One letter is twice as likely to be printed as the others.
- Explain how you would simulate this situation.
 - Use the simulation to find how many water bottles need to be purchased to collect all six letters.
 - Explain how the probability changes depending on the likelihood of each outcome.