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Unit 9 Review

For each type of question, the achievement level is indicated. Showing work is an important strategy in communicating your knowledge and ideas so please be thorough.

Learning Goal 9.1	I can calculate probabilities.

Developing	

1. When rolling a six-sided fair die, what is the probability of rolling
 	
   a.   a 3? $P(3) = \dfrac{1}{6}$
 	
   b.   an even number? $P(\text{even}) = \dfrac{1}{2}$
 	
   c.   a number greater than 4? $P(>4) = \dfrac{1}{3}$
 	
   d.   a number that is at least 3? $P(\geq 3) = \dfrac{2}{3}$
	2. If you have a pen, a pencil, a marker, an eraser and a pencil sharpener in a pencil case, what is the probability you would remove
	   a. a pencil? $P(\text{pencil}) = \dfrac{1}{5}$
	
	   b. a writing stick? $P(\text{writing stick}) = \dfrac{3}{5}$
	
	   c. not a writing stick? $P(\text{writing stick}') = \dfrac{2}{5}$

3. If you have a spinner with the letters P, E, A, R, and K on it, what is the probability of spinning
 	
   a.   a P? $P(\text{P}) = \dfrac{1}{5}$
 	
   b.   a vowel? $P(\text{vowel}) = \dfrac{2}{5}$
 	
   c.   a consonant? $P(\text{consonant}) = \dfrac{3}{5}$
 	
   d.   a letter from the word PEAR? $P(\text{PEAR}) = \dfrac{4}{5}$
	4. If you have a spinner with the colours red, orange, yellow, green, blue and purple, what is the probability of spinning
	
	   a. red? $p(\text{red}) = \dfrac{1}{6}$
	
	   b. a primary colour? $P(\text{primary}) = \dfrac{1}{2}$
	
	   c. a secondary colour? $P(\text{secondary}) = \dfrac{1}{2}$

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Proficient

5. You have two bags of marbles and each bag containing a blue, red, yellow and green marble. If one marble is taken from each bag.

   a. Draw a tree diagram to show the sample space.

   b. What is the probability that one of the marbles is green? $P(\text{green}) = \dfrac{6}{16} = \dfrac{3}{8}$

   c. What is the probability that the two marbles are the same colour? $P(\text{same colour}) = \dfrac{1}{4}$

   d. What is the probability that one of the marbles is not red. $P(\text{red}') = \dfrac{9}{16}$

6. Three frozen treats are flavoured raspberry, lemon and orange. Without looking, Tara chose a treat, then decided she didn't want it. She replaced it and without looking, chose another.

   a. Create a table to show the sample space.

   b. What is the probability that she picked the kind she didn't like the second time as well? $P(\text{unhappy}) = \dfrac{1}{3}$

   c. What is the probability that she chose a different flavour than the first on her second pick? $P(\text{unhappy}') = \dfrac{2}{3}$

7. You have 4 different t-shirts (white, green, orange and brown), 3 sweaters (black, grey and blue) and 2 pairs of pants (blue and brown).

   a. Draw a tree diagram to show the sample space of all possible outfits.

   b. What is the probability that you are wearing a white shirt? $P(\text{white}) = \dfrac{1}{4}$

   c. What is the probability that your sweater and pants are the same colour? $P(\text{S \& P}) = \dfrac{1}{6}$

   d. What is the probability that your t-shirt and pants are the same colour? $P(\text{T \& P}) = \dfrac{1}{8}$

8. You are rolling 2 six-sided fair dice.

   a. Create a table to show the sample space of the sum of the two dice.

   b. What is the probability that the sum is 6? $P(\Sigma = 6) = \dfrac{5}{36}$

   c. What is the probability that dice landed on the same number? $P(\text{same}) = \dfrac{1}{6}$

   d. What is the probability that the sum is less than 6? $P(\Sigma < 6) = \dfrac{5}{18}$

   e. What is the probability that the sum is at least 8? $p(\Sigma \geq 8) = \dfrac{5}{12}$

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Extending	
9. An ice cream shop has 30 different flavours of ice cream, 3 different cones and 5 toppings. How many possibilities of single scoop ice cream cones are there if you do not have to choose a topping? 540 How many possibilities of double scoop ice cream cones are there if you do not have to choose a topping? 16 200	10. If you have 2 decks of cards and draw a card from each of them, how many possible card pairings are there? 2 704

11. You roll 2 four-sided dice.
 	
  a. Find $P(1,1)$ $=\dfrac{1}{16}$
 	
  b. Find $P(\text{neither is a 1})$ $=\dfrac{9}{16}$
 	
  c. Find $P(\text{both are greater than 2})$ $=\dfrac{1}{4}$
 	
  d. Find $P(\text{both are even numbers})$ $=\dfrac{1}{4}$
	12. You draw a card from a deck of cards, replace it, shuffle and draw again.
	
	  a. Find $P(\text{the same card was drawn twice})$ $=\dfrac{1}{52}$
	
	  b. Find $P(\text{both cards are red})$ $=\dfrac{1}{4}$
	
	  c. Find $P(\text{one is a number, the other a face})$ $=\dfrac{30}{169}$

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Learning Goal 9.2	I can demonstrate an understanding of data analysis.

Developing							
1. Calculate the mean, median, mode and range of the following data sets.							
a. $\{7, 4, 6, 3\ 6, 2, 7, 4, 3, 6\}$				b. $\{3, 7, 4, 3, 7, 7, 4, 4, 2, 3\}$			
Mean	Median	Mode	Range	Mean	Median	Mode	Range
4.8	5	6	5	4.4	4	3, 4, 7	5
c. $\{8, 7, 2, 3, 9, 4, 3, 6, 5, 7\}$				d. $\{4, 9, 8, 3, 4, 3, 9, 2, 9, 9\}$			
Mean	Median	Mode	Range	Mean	Median	Mode	Range
5.4	5.5	3, 7	7	6	6	9	7
Proficient							
e. $\{18, 61, 62, 31, 59, 52, 18, 10, 22, 61\}$				f. $\{93, 19, 30, 97, 79, 68, 67, 25, 23, 41\}$			
Mean	Median	Mode	Range	Mean	Median	Mode	Range
39.4	41.5	18, 61	52	54.2	54	–	78
g. $\{84, 73, 77, 49, 63, 84, 12, 59, 64, 65\}$				h. $\{24, 50, 34, 37, 44, 41, 43, 49, 97, 84\}$			
Mean	Median	Mode	Range	Mean	Median	Mode	Range
63	64.5	84	72	50.3	43.5	–	73
Extending							
i.				j.			
Mean	Median	Mode	Range	Mean	Median	Mode	Range
4.5	5	5	2	135 cm	125 cm	125 cm	75 cm