Solutions

Nov 20-18:35

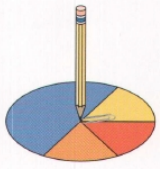
1. The table shows the possible outcomes from tossing a coin twice.

Joan says the ordered pairs are written correctly. Connor says that the outcome in the bottom left corner should be (T, H). Explain why Connor is right.

		Second Toss	
		Heads (H)	Tails (T)
First Toss	Heads (H)	H, H	H, T
	Tails (T)	H, T	T, T

2. Hasan says, "There is a 1 in 4 chance of spinning blue because there are 4 colours."

Kuzana says, "There is a 1 in 2 chance of spinning blue because half of the spinner is blue."
Who is right? Explain.



1. Connor is correct because HT is a different outcome to TH. They give the same result (one head, one tail) but they are different outcomes.

2. Kuzana is correct. There are 4 outcomes but they are not all equally likely. Half of the spinner is blue $\Rightarrow P = \frac{1}{2}$

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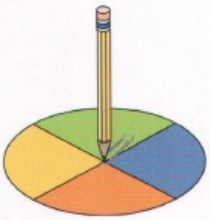
3. List all the possible outcomes for each situation.

a) Toss a coin.

b) Spin the spinner.



c) Roll a number cube.

a) Head, Tail

b) Yellow, Green, Red, Blue

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

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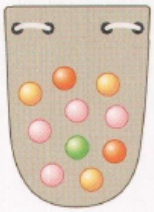
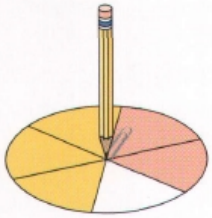
4. List all the possible outcomes for each situation.

a) Pick a marble out of a bag.



b) Spin the spinner.



c) Pick a coin out of a piggy bank.

a) R, R, Y, Y, Y, G, P, P, P, P

b) Y, Y, Y, W, P, P

c) Q, Q, Q, Q, N, D, D, D, P, P

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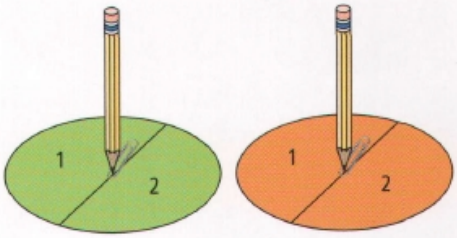
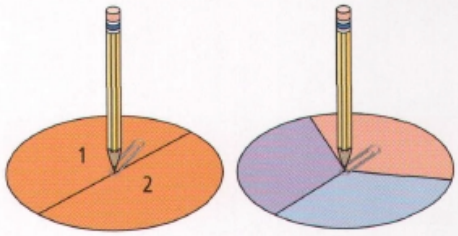
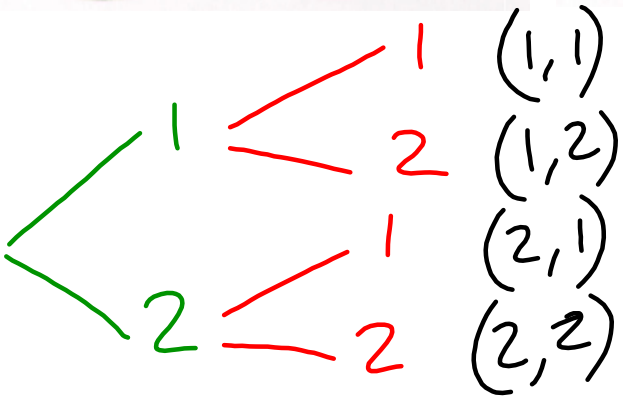
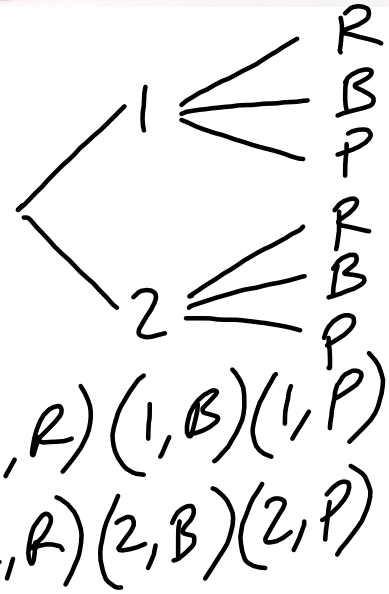
5. Draw a table or tree diagram to show all the possible outcomes for spinning both spinners.



6. Draw a tree diagram to show all the possible outcomes for spinning both spinners.







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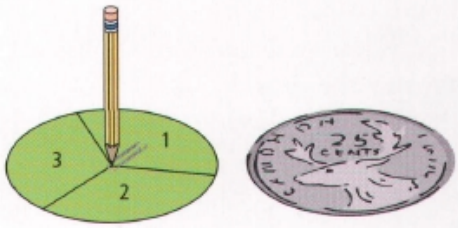
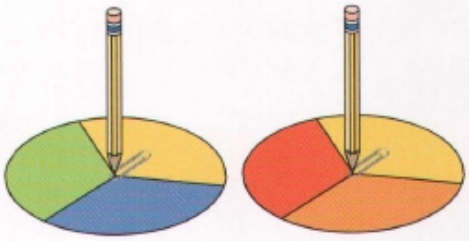
7. Use an organizer to show all the possible outcomes for spinning the spinner and tossing the coin.



	1	2	3
H	H,1	H,2	H,3
T	T,1	T,2	T,3

8. Use an organizer to show all the possible outcomes for spinning both spinners.



	R	Y	O
G	GR	GY	GO
Y	YR	YY	YO
B	BR	BY	BO

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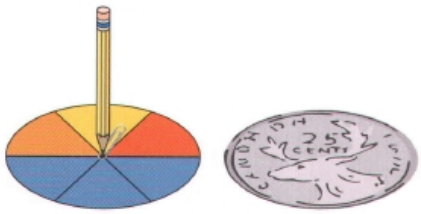
9. a) Create an organizer to show all the possible outcomes for the spinner and the coin.



b) What is the predicted probability of spinning yellow and getting tails?

c) What is the predicted probability of spinning blue and getting heads?

	H	T
B	BH	BT
B	BH	BT
B	BH	BT
R	RH	RT
Y	YH	YT
O	OH	OT

b) $P(YT) = \frac{1}{12}$

c) $P(BH) = \frac{3}{12}$ $(= \frac{1}{4})$

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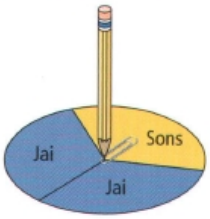
10. Jai and her two sons spin a spinner to decide which television show to watch. Jai chooses if her name is spun twice in two spins. Otherwise, her sons choose.



a) Create an organizer to show all the possible outcomes for spinning the spinner twice.

b) What is the predicted probability of Jai choosing the show?

c) What is the predicted probability of her sons choosing the show?

	Jai	Jai	Sons
Jai	JJ	JJ	JS
Jai	JJ	JJ	JS
Sons	SJ	SJ	SS

b) $P(JJ) = \frac{4}{9}$

c) $P(\text{Not } JJ) = \frac{5}{9}$

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11. Two pairs compared their experimental probabilities for Rock, Paper, Scissors. Their results were different. Explain why experimental probabilities are not always the same.

Experimental probabilities will be different. Each trial produces a random outcome. There is no "memory" of previous outcomes. However, with repeated play we would expect the experimental and probabilities to become closer in value to each other.

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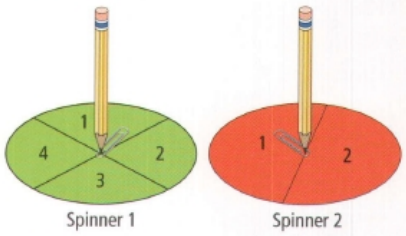
12. A version of *Into the Pond* uses the sum of two spinners.



a) What are the possible sums when you add the results from these two spinners?
b) What is the predicted probability of getting each sum?

	1	2	3	4
1	2	3	4	5
2	3	4	5	6

a) 2, 3, 4, 5, 6

b) $P(2) = \frac{1}{8}$ $P(3) = \frac{2}{8}$ $P(4) = \frac{2}{8}$ $P(5) = \frac{2}{8}$ $P(6) = \frac{1}{8}$

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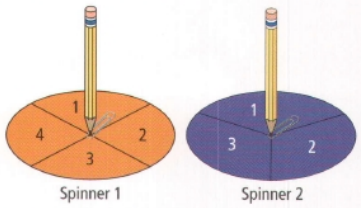
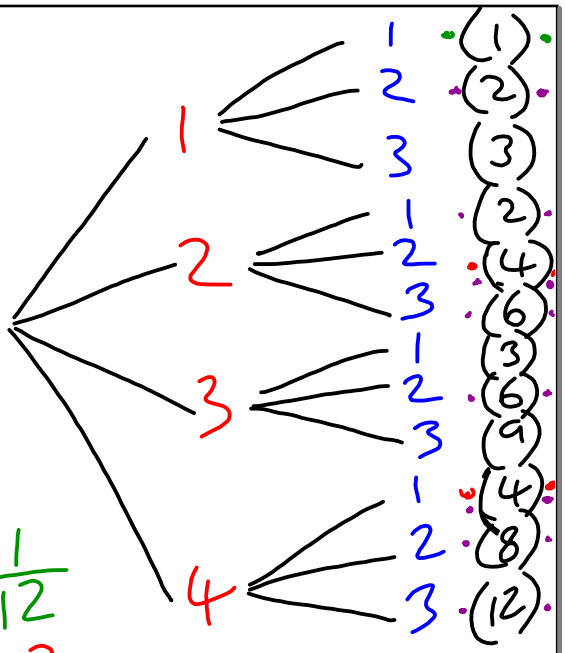
13. Two spinners are numbered as shown.



a) Draw a tree diagram to show all the possible outcomes for spinning both spinners.
b) Find the product of each outcome in your tree diagram.
c) What is the predicted probability of spinning a product of 1?
d) What is the predicted probability of spinning a product of 4?
e) What is the predicted probability of spinning a product that is an even number?



c) $P(\text{product } 1) = \frac{1}{12}$

d) $P(\text{product } 4) = \frac{2}{12}$

e) $P(\text{even product}) = \frac{8}{12}$

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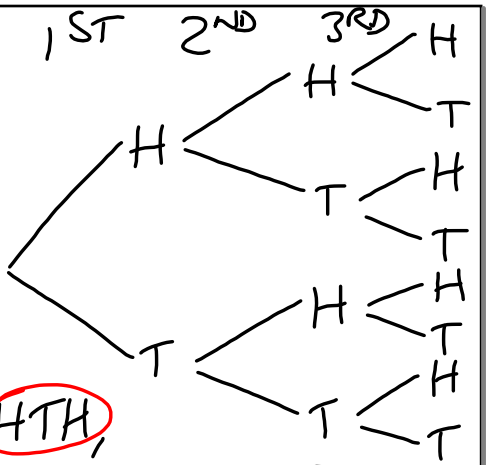
14. Jenna and Monique cannot agree on which movie to see. They decide to toss a coin and "best of three wins." If there are at least two heads out of three, Jenna gets to decide. Otherwise, Monique decides.

a) Create an organizer to show all the possible outcomes.
b) What is the predicted probability that Jenna gets to decide?
c) What is the predicted probability of getting at least one tail?



a) HHH, HHT, HTH, HTT, THH, THT, TTH, TTT

b) $P(\text{Jenna decides}) = \frac{4}{8}$ $\left(= \frac{1}{2}\right)$

c) $P(\text{at least one tail})$ is the same as anything except $P(HHH)$

$= 1 - \frac{1}{8} = \frac{7}{8}$

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