Probability

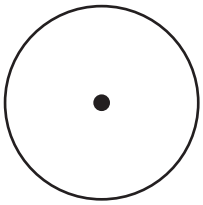
Activity 5 - Make Your Own Spinner

In this activity, you will be able to make a 4-colour spinner and then figure out some probabilities using your spinner.

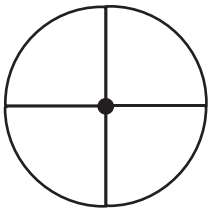
For this activity you will need: a piece of white cardstock, a compass, coloured crayons or pencils, a black marker, scissors, a craft pin with two ends and (optional) four sheets of different coloured paper and glue.

Activity Instructions:

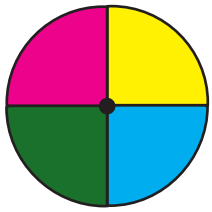
- On the white sheet of cardstock draw a large circle. Mark the centre of the circle.



- Divide your circle into four equal parts by drawing 2 lines through the centre.



- Pick four of your favourite colours (make sure that they are contrasting so that you can see them better). We chose blue, yellow, green and magenta.
- Colour each of the four parts of the circle a different colour. (Another option is to cut out four pieces of different coloured paper and glue them into the spaces on the circle; but that requires a bit more work).



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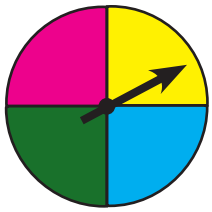
- Cut out your circle.
- Draw an arrow on the remaining piece of cardstock. It should be approximately the length of the radius of the circle (the arrow below is not drawn to scale). Colour your arrow black.

- Make a small hole through the centre of the circle. You can use a sharp pencil or a pin for this.
- Put the arrow on top of the circle and secure it using a double ended pin.
- Make sure that the arrow is not on too tight so that it can freely move and spin.



Activity Questions:

- Spin your spinner 12 times and record how many times the arrow pointed to each colour.
- Figure out what the experimental probabilities are of the arrow pointing to each colour. If your total number of trials is 12, then find the probabilities using the formula:

Probability = (Number of Times the Arrow Pointed to the Colour / 12

Colour	Number of Times the Arrow Pointed to the Colour	Experimental Probability of the Arrow Pointing to the Colour
1		
2		
3		
4		

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Activity 5 - Make Your Own Spinner - *continued*

- Find the expected probability of the arrow pointing to each colour of the spinner. If you spin the spinner once, what is the probability of the arrow pointing to each of these colours? Use this formula:

P (colour) = number of ways the arrow can point to that colour / total number of colours.

- Compare your mathematical and experimental probabilities. How are they the same? How are they different?
- Picture a five-coloured spinner with equal sections: pink, blue, green, yellow and purple. What is the probability the arrow will point to purple?
- Colour a spinner with four equal sections in such a way that the probability of an arrow pointing to pink is 2/4, while the probability of the arrow pointing to blue is 1/4 and to green is 1/4.
- Colour a spinner with six equal sections in such a way that there one chance in six of the arrow pointing to yellow, two chances in six of the arrow pointing to pink, one chance in three of the arrow pointing to blue, and one chance in six of the arrow pointing to green.

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Activity 5 - Make Your Own Spinner - *continued*

Solutions:

- Figure out what the experimental probabilities are of the arrow pointing to each colour. If your total number of trials is 12, then find the probabilities using the formula:

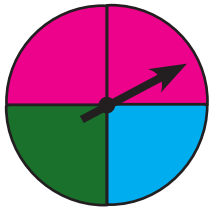
  P (purple) = P (red) = P (blue) = P (green) = 1/4

  Check: 1/4 + 1/4 + 1/4 + 1/4 = 1

  We know: *P (certain colour) = number of ways the arrow can point to that colour) / total number of colours.*

- The mathematical and experimental probabilities should be close to each other. The experimental would mean over 12 spins the arrow points to each colour 3 times.
- Given a 5-coloured spinner with equal sections: red, blue, green, yellow, and purple. What is the probability the arrow will point to the colour purple?

  P (purple) = 1 / 5
- Colour a spinner with 4 equal sections in such a way that the probability of an arrow pointing to a colour pink is 2/4, while the probability of the arrow pointing to colour blue is 1/4, and to colour green is 1/4.



- Colour a spinner with six equal sections in such a way that there one chance in six of the arrow pointing to yellow, two chances in six of the arrow pointing to pink, one chance in three of the arrow pointing to blue, and one chance in six of the arrow pointing to green.