

Fidget Spinners

Science Lesson

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How to Spin a Fidget Spinner

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1. Grip the middle of the fidget spinner between your index finger and thumb.
2. Flick one of the branches with your middle finger.



Investigating Spin Time.

Spin time is the length of time a fidget spinner will spin for.



We can measure spin time with a stopwatch

Investigating Spin Time.



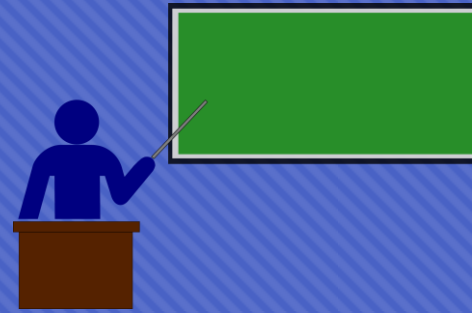
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We can increase the accuracy of measuring our spin time by:

- Repeating our tests
- Calculating the average spin time

$$\text{Average} = \frac{(\text{Time for first spin}) + (\text{Time for second spin})}{2}$$

Practice Calculating Averages:



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Watch as your teacher shows you how to calculate the average:

Spin Test	Spin Time (Test One) Seconds	Spin Time (Test Two) Seconds	Spin Time Average Seconds
Small Fidget Spinner	30	28	

Practice Calculating Averages:



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Try to calculate the average for this experiment:

Spin Test	Spin Time (Test One)	Spin Time (Test Two)	Spin Time Average
	Seconds	Seconds	Seconds
Small Fidget Spinner	24	29	

Practice Calculating Averages:



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More practice

Spin Test	Spin Time (Test One)	Spin Time (Test Two)	Spin Time Average
	Seconds	Seconds	Seconds
Fidget Spinner 1	24	29	
Fidget Spinner 2	20	10	
Fidget Spinner 3	3	5	
Fidget Spinner 4	86	99	
Fidget Spinner 5	160	148	

Materials Used in a Fidget Spinner

Plastic



Weights



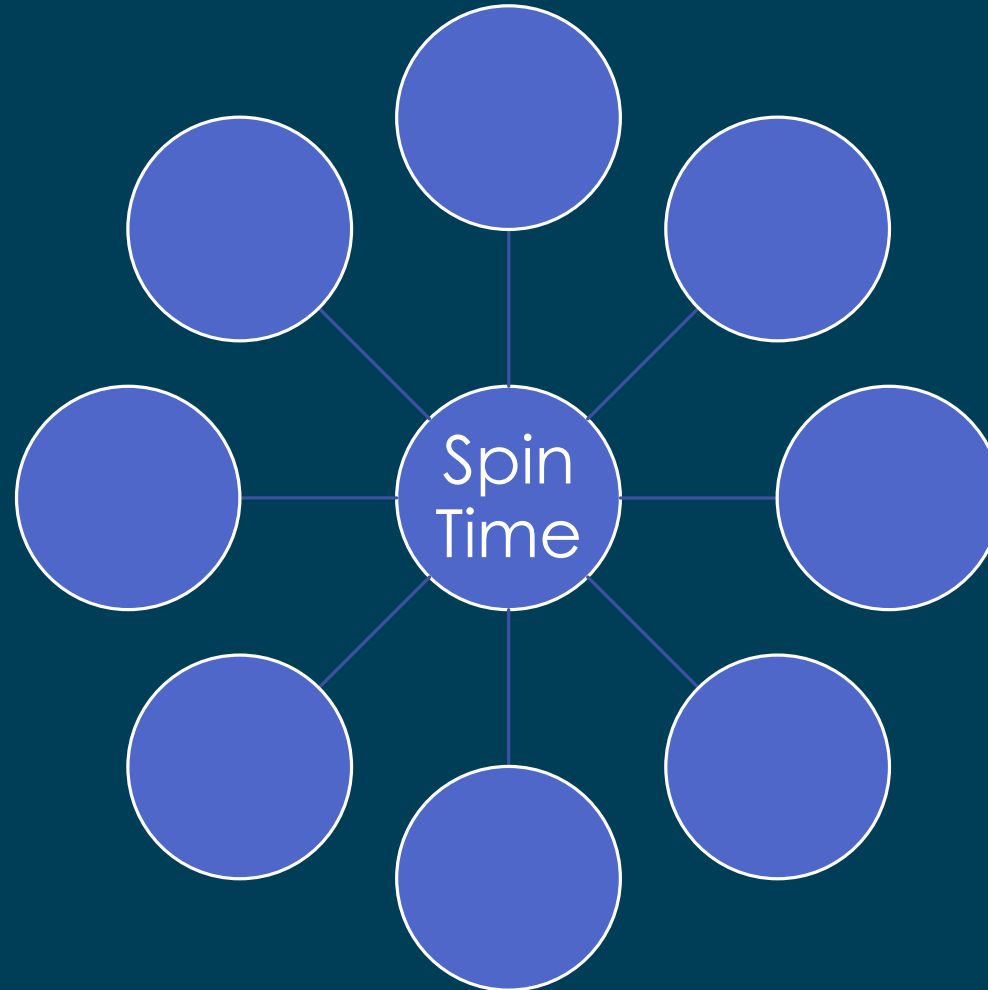
Bearing.

Bearings reduce friction so that the fidget spinner has a longer spin time.

Three types - steel, ceramic or hybrid.

What Factors Affect the Spin Time?

In groups,
brainstorm what
factors affect the
spin time of
fidget spinners.

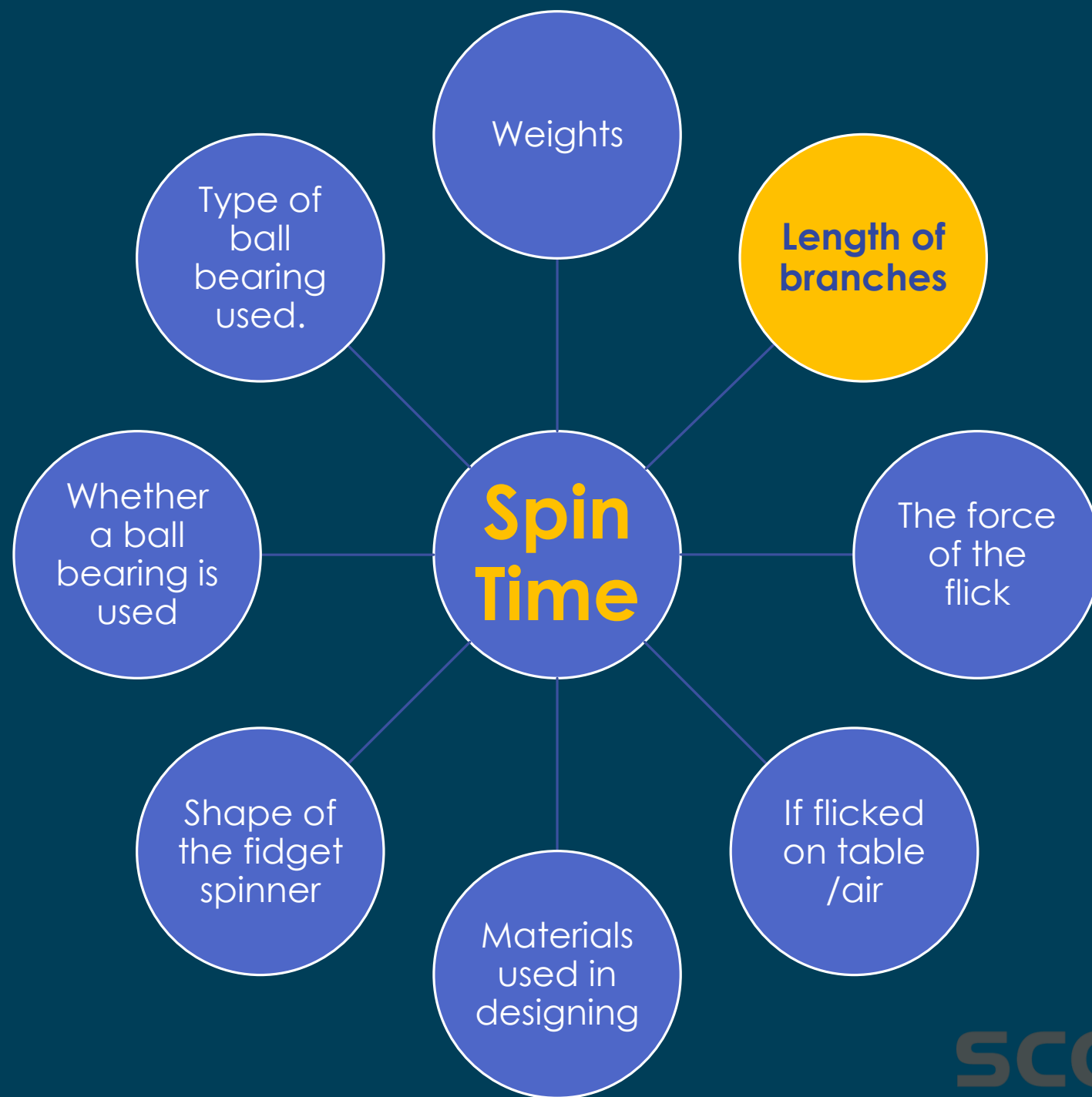




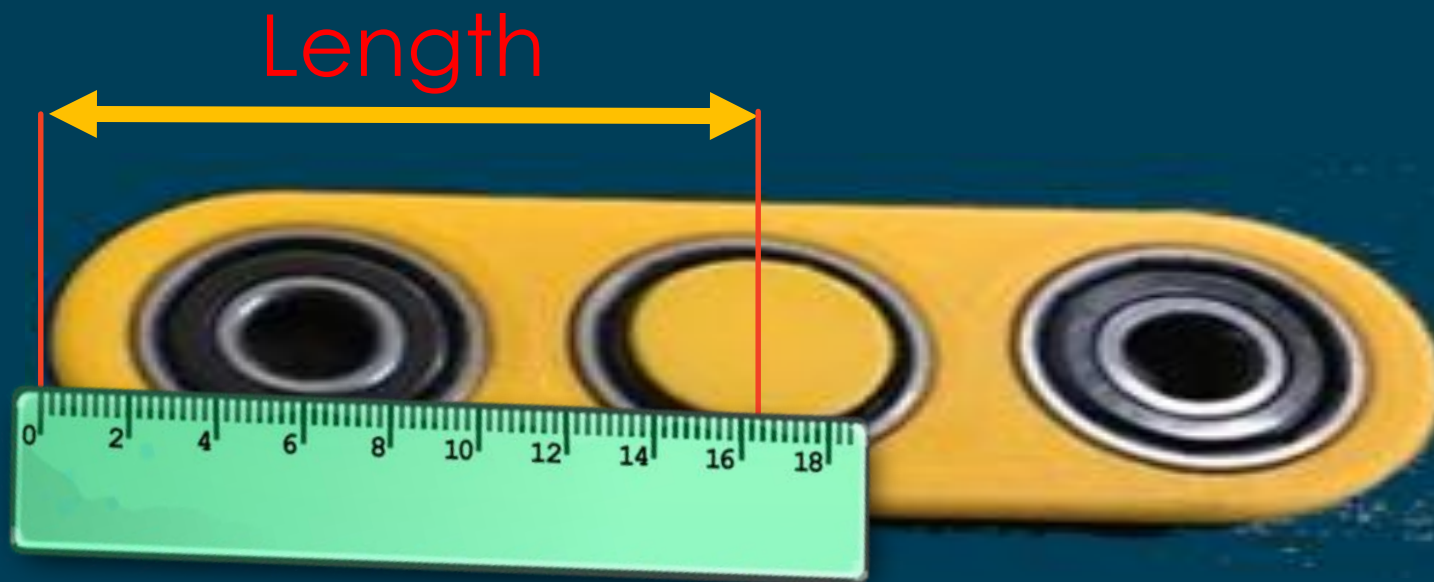


Investigate the spin time for various branch lengths.

(Keep other variables constant)



Length of the Branch



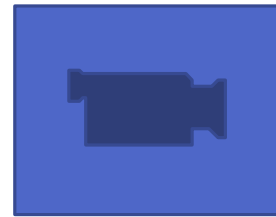
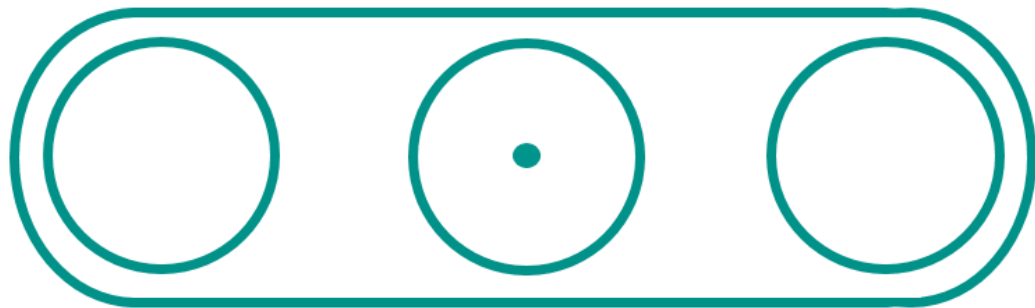
We can measure the length of the fidget spinner branch using a ruler.

Length of the Branch



Which will have the longest spin time:

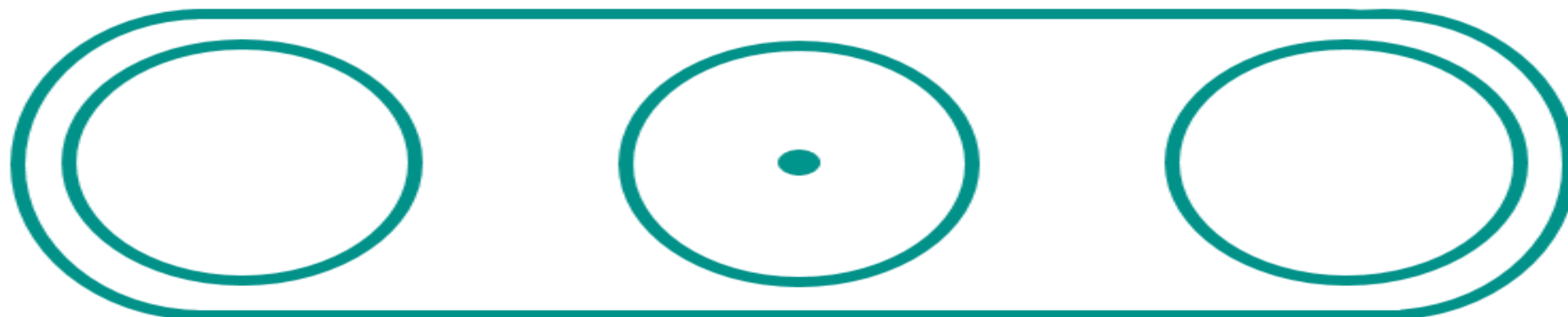
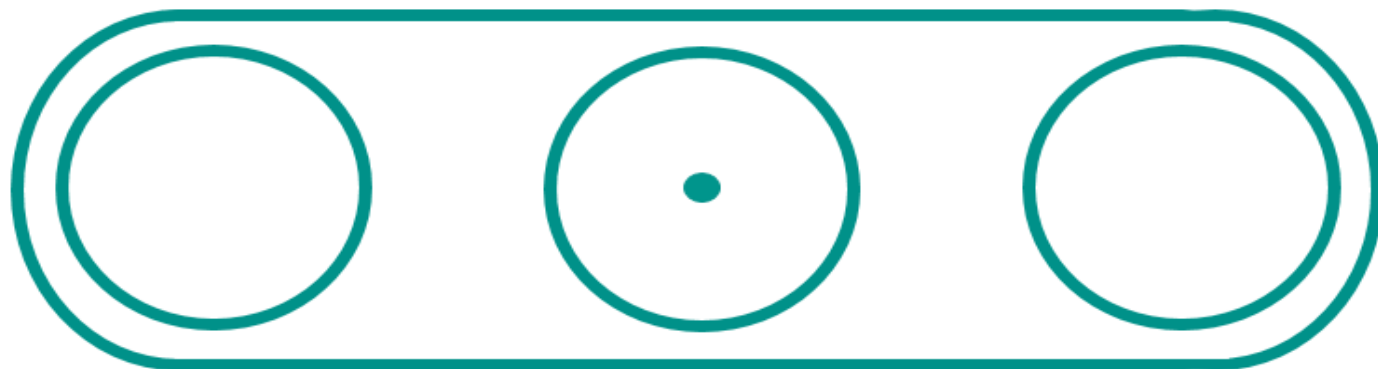
1. A shorter branch fidget spinner
2. A longer branch fidget spinner



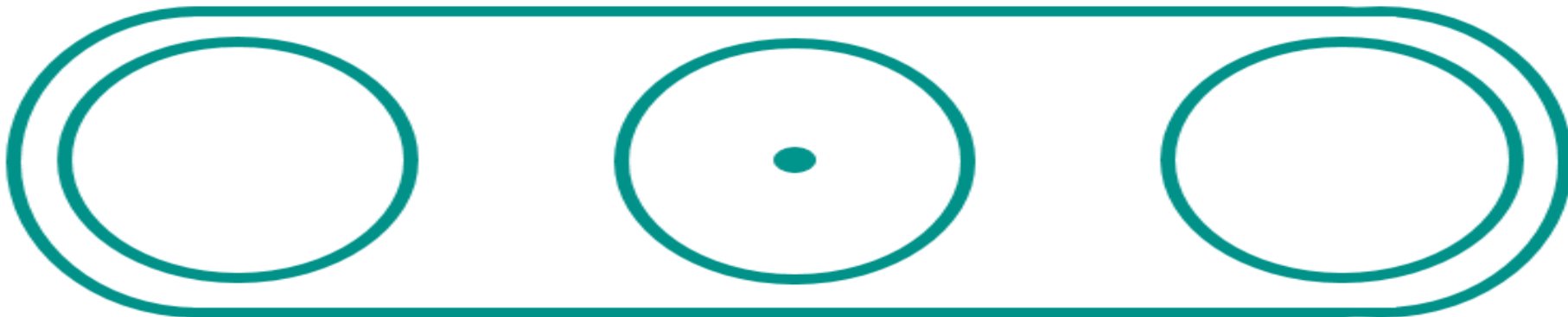
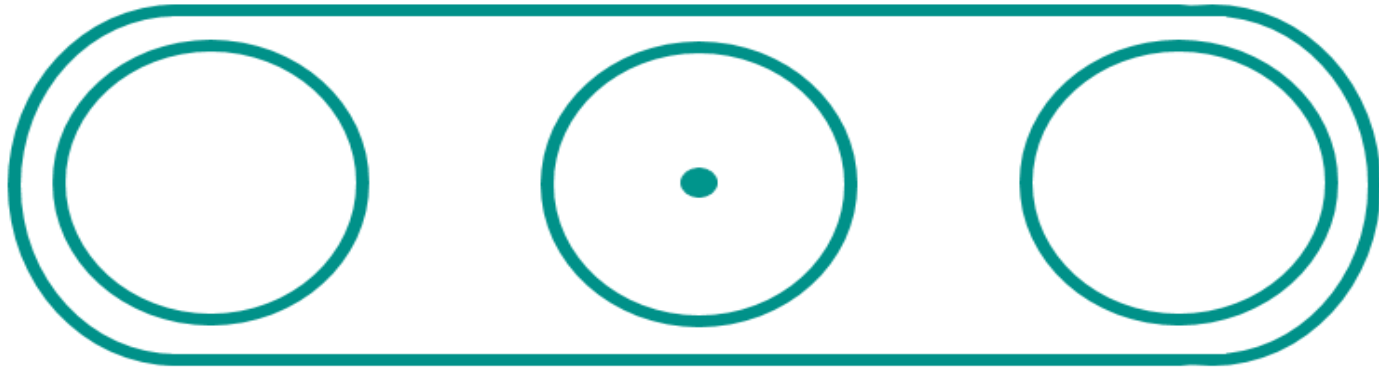
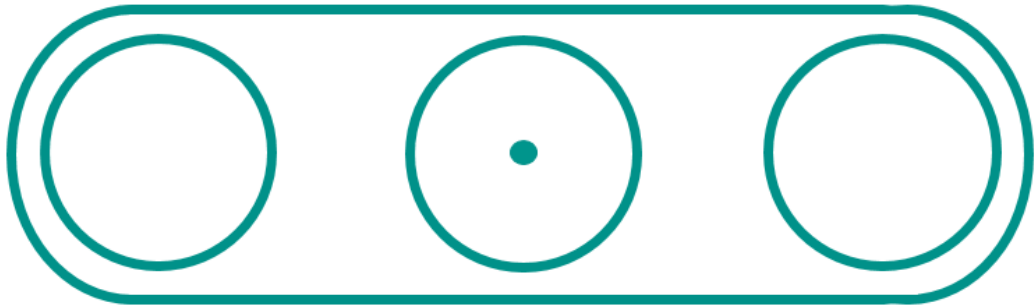
Materials needed to create a fidget spinner:

- Card / laminated paper
- Toothpick
- Scissors
- Glue
- Spinner Templates
- Coins / Weight

Watch the video to help you create & design the fidget spinners.



Template for creating your own fidget spinner.



Length of branch (Unit)	Spin Time One (Unit)	Spin Time Two (Unit)	Spin Time Average (Unit)

Conclusion: The spinner with the longest spin time was _____.
The spinner with the shortest spin time was _____.
The difference between the longest and shortest spin time was _____.

Extension: Can you represent the collected data graphically?

Questions to Think About:

1. What is meant by the word 'Spin Time'?
2. When using a fidget spinner, what effects the spin time?
3. What type of fidget spinner design leads to a longer spin time?
4. What type of fidget spinner design leads to a shorter spin time?
5. Does the hand you use to spin affect the spinning time?
6. Why do we repeat the measurements for spin time and get an average?
7. How do you calculate an average spin time?
8. How do you measure the length of a branch on a fidget spinner?
9. What is a control variable?
10. What is a fair test?

Conclusion

Report your conclusion by going to
www.menti.com

Code to use: **68 05 91**

More Investigation Ideas for Fidget Spinners in the Science Classroom.



Other spin time investigations for fidget spinners.

Weight of fidget spinner (Unit)	Spin Time One (Unit)	Spin Time Two (Unit)	Spin Time Average (Unit)

Conclusion: The spinner with the longest spin time was _____.
 The spinner with the shortest spin time was _____.
 The difference between the longest and shortest spin time was _____.

Extension: Can you represent the collected data graphically?

Other spin time investigations for fidget spinners.

With / Without ball bearing	Spin Time One (Unit)	Spin Time Two (Unit)	Spin Time Average (Unit)
With a ball bearing			
Without a ball bearing			

Conclusion: The spinner with the longest spin time was _____.
 The spinner with the shortest spin time was _____.
 The difference between the spin time was _____.

Extension: Can you represent the collected data graphically?

Other spin time investigations for fidget spinners.

Number of branches on fidget spinner	Spin Time One (Unit)	Spin Time Two (Unit)	Spin Time Average (Unit)

Conclusion: The spinner with the longest spin time was _____.
 The spinner with the shortest spin time was _____.
 The difference between the longest and shortest spin time was _____.

Extension: Can you represent the collected data graphically?

Other spin time investigations for fidget spinners.

Type of ball bearing used	Spin Time One (Unit)	Spin Time Two (Unit)	Spin Time Average (Unit)
Steel			
Ceramic			
Hybrid			

Conclusion: The spinner with the longest spin time was _____.

The spinner with the shortest spin time was _____.

The difference between the longest and shortest spin time was _____.

Extension: Can you represent the collected data graphically?

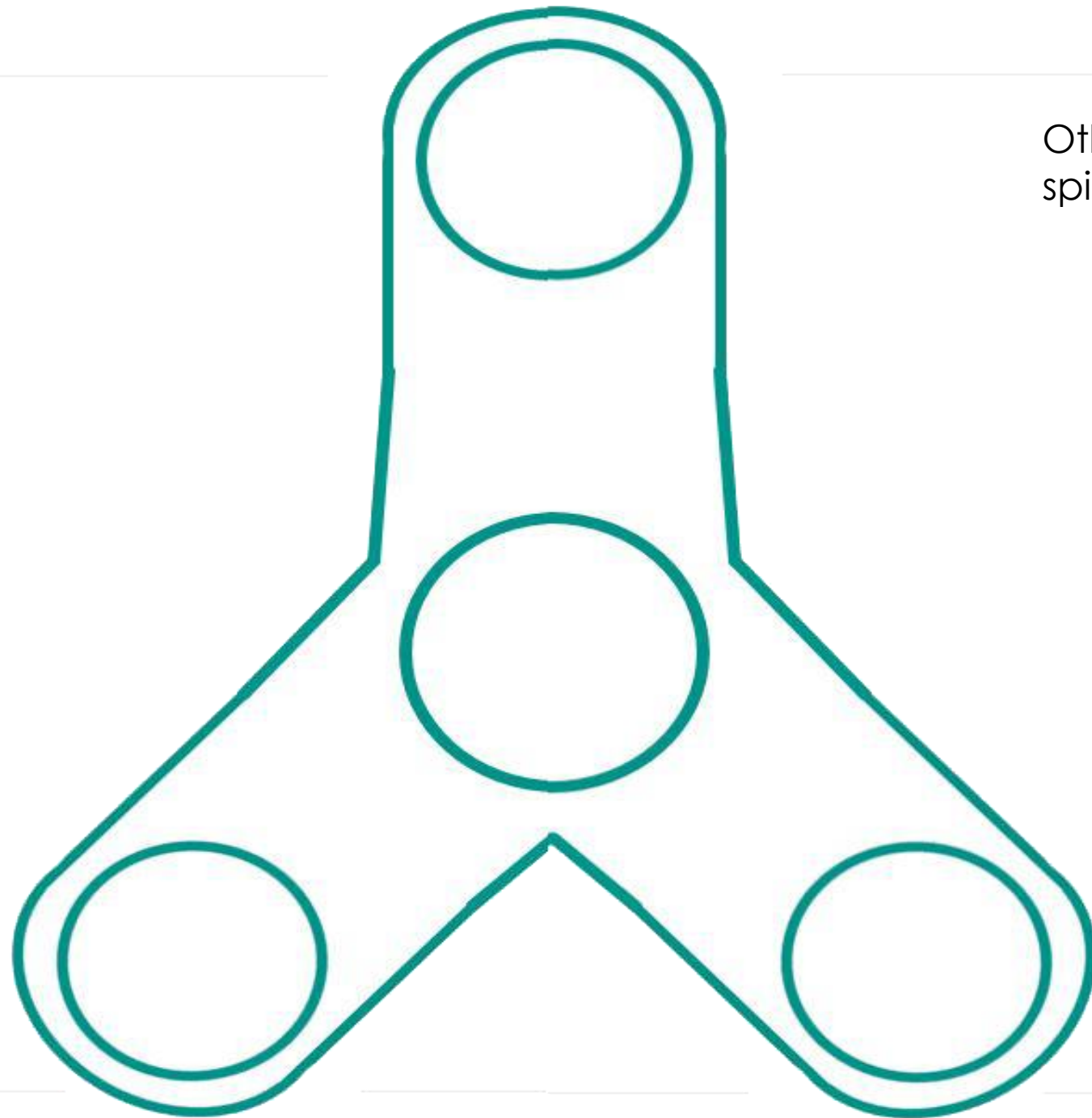
Other spin time investigations for fidget spinners.

Material used in the outer design.	Spin Time One (Unit)	Spin Time Two (Unit)	Spin Time Average (Unit)

Conclusion: The spinner with the longest spin time was _____.
 The spinner with the shortest spin time was _____.
 The difference between the longest and shortest spin time was _____.

Extension: Can you represent the collected data graphically?

Other designs for fidget spinners.



Other Fidget Spinner Designs

- <https://www.youtube.com/watch?v=F8wAkfgsZLY> (Bottles)
- <https://www.youtube.com/watch?v=9aODUQvjKpY> (Paper – Easier & better)
- <https://www.youtube.com/watch?v=OsLKJY4Doc4> (Cardboard – no spin show)
- <https://www.youtube.com/watch?v=r98BTmcLWDo> (Different Shapes)
- <https://www.youtube.com/watch?v=ZOInmxFFRW4> (Different Shapes)
- <https://www.youtube.com/watch?v=zHfE5ZTD9UI> (Different Shape – Strews)
- <https://www.youtube.com/watch?v=3GPbxmkl2Ec> (Bottle Caps & Super Glue)

[Click here for the downloadable PPT
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