Safer speeds - maths extension exercise

This document is intended to be used to extend the learning from the Safer Speeds workshop.

Learning experience

Reminder about previous lesson

Discuss with students to access past knowledge from the previous lesson

- Who are road users?
    - Everyone is a road user, regardless of the mode if you are using the road, you are a road user.
- Why do we have different speed limits?
    - 100km – Roads where there is less stopping, starting and where you won't find many pedestrians.
    - 80km – Used on rural roads, where there tends to be less stopping and starting but you may get more people/stock moving about.
    - 50km - Used on busy streets in towns. The speed is lower because there are more road users.
    - 30km - Used around schools and on local residential streets where there are more road users and more pedestrians.
- What happens to car stopping distance at higher speeds?
    - The faster a car goes the longer it will take to stop

Worksheet

Have students work through the worksheet on pages two and three. They will need graph paper for charting. On page two of the worksheet there is a discussion, with the following questions for students. Here are some pointers for guiding their answers.

What trends can you see from your graphs?

- The faster cars go the longer it takes for them to stop

Not everybody's graphs are the same. Why do you think this is?

- Some followed and understood the rules/Some didn't understand the rules
- Some liked going fast, were excited, bored, or trying to win, show off
- Some were focussed/Some were distracted
- Different types of shoes so different grip/friction

What does this mean for road users?

- In real life, drivers are in different cars, with different tyres, on different roads, and in different moods.
- Distractions, impairment, speed, and road conditions all affect how long it takes to stop.
- Some people choose not to follow or don't understand laws and rules, which means some people may not travel at the speed they should.

If you have students who don't have data from the safer speeds workshop here is some example data.

Name	Slow	Medium	Fast
Sam	10	44	71
Jordan	38	69	133
Riley	13	23	70

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Safer speeds - Maths extension worksheet

Data table

Name	Slow	Medium	Fast

Mean speed

To find the mean, add all numbers together, then divide by the number of your group.

Slow speed mean

Step 1: Add slow speeds: _____ +_____ + _____ = _____

Step 2: Divide total of step one by the number of people in your group = _____ / _____ = _____

Mean for slow speed = _____ cm

Medium speed mean

Step 1: Add medium speeds: _____ + _____ + _____ = _____

Step 2: Divide total of step one by the number of people in your group = _____ / _____ = _____

Mean for medium speed = _____ cm

Fast speed mean

Step 1: Add fast speeds: _____ + _____ + _____ = _____

Step 2: Divide total of step one by the number of people in your group = _____ / _____ =_____

Mean for fast speed = _____ cm

Median speed

To find the median, put the data from the table in order from smallest to biggest and pick the middle number.

Slow speed median

Numbers smallest to largest: _____

Median = _____ cm

Medium speed median

Numbers smallest to largest: _____

Median = _____ cm

Fast speed median

Numbers smallest to largest: _____

Median = _____ cm

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Creating graphs

Create a line graph

A line graph helps us see how stopping distance changes as speed increases.

Instructions:

1. Draw your x-axis including a label such as Speed.

2. Draw your y-axis including a scale and a label such as Stopping distance (cm).

3. Plot one point for each of the speeds (slow, medium and fast) and stopping distance.

4. Connect the dots with straight lines.

Create a bar chart

A bar chart helps us compare stopping distances at different speeds.

Instructions:

1. Draw your x-axis including a label such as Speed.

2. Draw your y-axis including a scale and a label such as Stopping distance (cm).

3. Draw and label bar for each speed (slow, medium and fast) using the average stopping distance.

Discussion on results

What trends can you see from your graphs?

Not everybody's graphs are the same even though everyone was in the same space. Why do you think this is?

What might this mean for road users?

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