

## Summary

### Test Identification

<b>Name</b>	2019 MAT SW 2.5
<b>Date Created</b>	20 May 2019
<b>Date Modified</b>	27 Aug 2019
<b>Subject</b>	Mathematics
<b>Status</b>	SCORED
<b>Sequence Number</b>	924725
<b>Total Test Time</b>	57 minutes
<b>Delivery Method</b>	Onscreen

### Curriculum Strand

<b>Number Sense &amp; Operations</b>	14	<b>Statistics</b>	14
<b>Algebra</b>	14		

### Curriculum Level

<b>4B</b>	3	<b>4P</b>	1	<b>4A</b>	1
<b>5B</b>	7	<b>5P</b>	25	<b>5A</b>	14

### Cognitive Processing

<b>Surface</b>	30	<b>Deep</b>	21
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### Slider Settings

<b>Strands</b>		<b>Level</b>	
<b>Number Sense &amp; Operations</b>	Most	<b>Level 5</b>	Most
<b>Algebra</b>	Most		
<b>Statistics</b>	Most		

## Marking Guide : 2019 MAT SW 2.5

Q.No	Marking Key
1	a
2	c
3	c
4	c
5	c
6	c
7	c
8	c
9	a
10	a
11	d
12	a
13	b
14	c
15	b
16	b
17	b
18	b
19	c
20	c
21	c
22	d
23	1
24	6
25	a
26	c
27	b
28	b
29	d
30	a
31	d
32	b
33	d

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### Instructions

**Underlined Questions** e.g. 10 :Use teacher judgement. Give 1 if answer matches marking guide (unless otherwise instructed). For incorrect answers give 0 (zero).

**All other Questions:** Enter the response chosen by the student using letters. For example, 'a' for the first option; 'b' for the second option; 'c' for the third option and so on.

**Questions Not Answered:** Enter a dash (-).

Q.No	Marking Key
34	d
35	b
36	d
37	d
38	c
39	a
40	a
41	d
42	20
43	b
44	c
45	d
46	b
47	c
48	c
49	b
50	b
51	2.4 (m cubed)

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Instructions

**Underlined Questions** e.g. 10 :Use teacher judgement. Give 1 if answer matches marking guide (unless otherwise instructed). For incorrect answers give 0 (zero).

**All other Questions:** Enter the response chosen by the student using letters. For example, 'a' for the first option; 'b' for the second option; 'c' for the third option and so on.

**Questions Not Answered:** Enter a dash (-).

Choose a circle to show how much each sentence is like you

Very Unlike Me 1	Unlike Me 2	Like Me 3	Very Like Me 4
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**01.** I like maths at school.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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**02.** I am good at maths.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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**03.** My teacher thinks I am good at maths.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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**04.** My Mum and Dad think I am good at maths.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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**05.** I enjoy doing maths in my own time (not at school).

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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**06.** I enjoy doing things in maths that I haven't tried before.

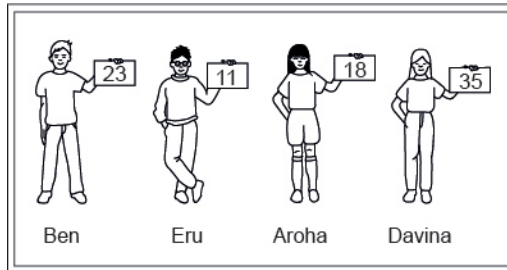
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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## Practice Questions

These practice questions are to help you understand how to show your answer for different types of questions.

**P01.** Who is holding a card with an even number on it?

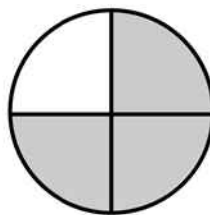


- Ben
- Eru
- Aroha
- Davina

**P02.** Complete this number pattern.

2, 4, \_\_\_\_\_, \_\_\_\_\_, 10

**P03.** What fraction of this circle is shaded?



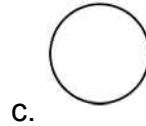
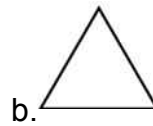
\_\_\_\_\_



**P04.** Match the sentence with the correct shape.

1. I have three sides

2. I have 4 sides



**P05.** Which numbers make this number sentence **TRUE**?

$$2 + \star > 5$$

1

2

3

4

5

**P06.** Put the numbers 1, 2, 3, and 4 in the boxes to order these numbers from biggest (1) to smallest (4).

3

7

2

0

**P07.** Select whether the following statements are True or False.

In the number 213, the value of 1 is ten.

**TRUE**

**FALSE**

In the number 504, the value of 5 is fifty.

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**01.** A football competition consists of 18 clubs. Each club is given 513 Grand Final tickets for its members to use.

What is the **BEST** estimate of the total number of Grand Final tickets given to the clubs?

- 10 000
- 5000
- 1000
- 500

**02.** Alba needed to know about how much the sum of 19.6, 23.8, and 38.4 is. She correctly rounded each of these numbers to the nearest whole number.

What three numbers did she use?

- 19, 23, 38
- 19, 24, 38
- 20, 24, 38
- 20, 24, 39

**03.** John had to multiply 79 by 6.

Which one of these would be **closest** to his answer?

- 420
- 460
- 480
- 500



04. If 50% of a number is 20, what is 75% of the number?

- 8
- 15
- 30
- 45

05. The table shows the results of a survey.

What is the mean number of hours the students worked on the science project?

**Number of hours students worked on a science project**

Student	Hours
Greta	25
Juan	14
Mika	20
Paulo	18
Su-Lin	16
Tanika	31
Darnell	33
Wesley	27

- 16
- 20
- 23
- 182

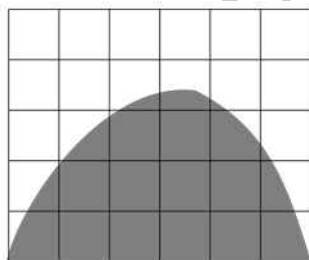
**06.** Dave is a member of a bowling league. The table below shows his record for the last 10 games (100 frames) he bowled. Based on his previous record, what is the probability that Dave will bowl a strike in the next frame?

**Dave's Bowling Results**

Type of Ball	Number of Frames
Strike	12
Spare	26
Gutter ball	3
Other	59

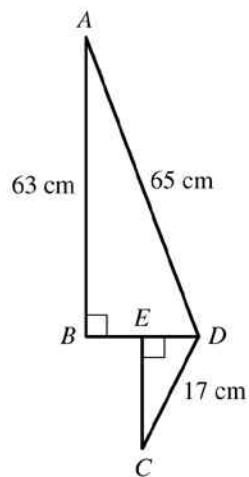
- $\frac{3}{100}$
- $\frac{3}{50}$
- $\frac{3}{25}$
- $\frac{6}{25}$

**07.** Each of the small squares in the figure is 1 square unit. Which is the **BEST** estimate of the area of the shaded region?



- 10 square units
- 12 square units
- 14 square units
- 16 square units
- 18 square units

**08.** In the figure below,  $E$  is the midpoint of  $BD$ .  
What is the length of  $CE$ ?

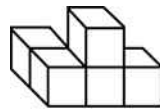


- 5.7 cm
- 8 cm
- 15 cm
- 18.8 cm

**09.** In a school election with three candidates, Joe received 120 votes, Mary received 50 votes and George received 30 votes.  
What percentage of the total number of votes did Joe receive?

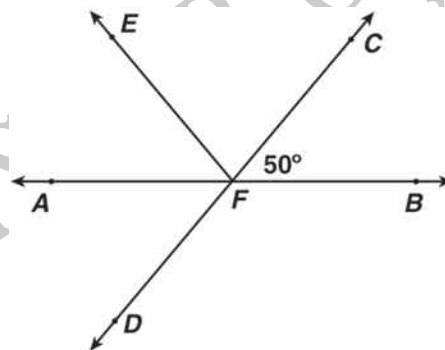
- 60 %
- $66\frac{2}{3}$  %
- 80 %
- 120 %

10. The figure below will be rotated to a different position. Which of these could be the figure after it is rotated?



- 
- 
- 
- 

11. In the figure below,  $CD$  intersects  $AB$  at  $F$ ,  $m\angle CFB = 50^\circ$ , and  $\angle EFA = \angle AFD$ . What is  $m\angle EFC$ ?



- $40^\circ$
- $50^\circ$
- $70^\circ$
- $80^\circ$

12. A car-rental agency charges \$38 per day plus \$0.21 for each mile driven. Sandra paid \$88.40 for renting a car from them for one day.

Which of the following could be used to find the number of miles she drove that day?

- $0.21x + 38 = 88.4$
- $0.21x = 88.4$
- $38x = 0.21(88.4)$
- $38x + 0.21 = 88.4$

13. What is the median of the numbers below?

4, 8, 3, 2, 5, 8, 12

- 4
- 5
- 6
- 7
- 8

14.  $\frac{x}{2} < 7$  is equivalent to

- $x < \frac{7}{2}$
- $x < 5$
- $x < 14$
- $x > 5$
- $x > 14$

**Use the following information to answer question15..**

Rasela works for the park service. She wanted to estimate the population of fish in a park lake. She obtained samples on which to base her estimate by casting a net in each of seven locations in the lake, counting the fish she caught and then releasing the fish. Her results are shown in the table below:

Results of fish sampling

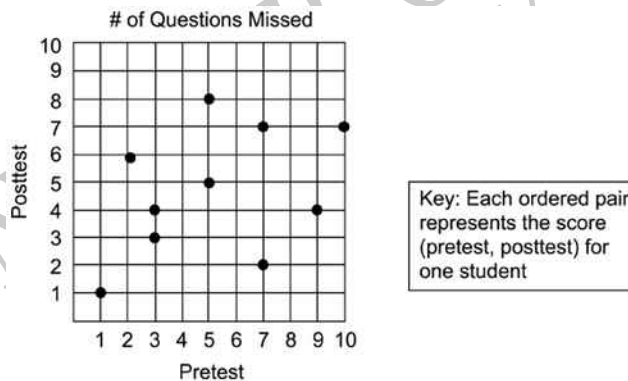
Location	1	2	3	4	5	6	7
Number of Fish Caught	18	12	18	11	9	13	17

15. What is the mean number of fish caught?

- 13
- 14
- 17
- 18

End of Section

16. Ms Sandy made a scatter plot to compare the number of questions each student missed on the pretest and the posttest, as shown in the graph below. How many of Ms Sandy's 10 students missed the same number of question on both test?



- 2
- 4
- 8
- 10

17. Tania earned the following scores on her first 10 science tests:

73, 86, 91, 87, 88, 79, 82, 93, 90, 86

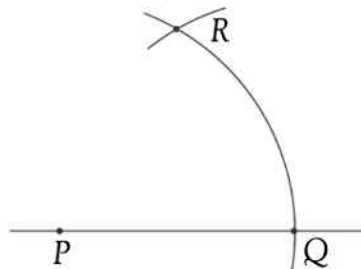
Which one of these will be changed if Tania earns a score of 50 on her next test?

- Mean, median and mode
- Mean and median
- Mean only
- Median only

18. Which one of the following statements is **TRUE**?

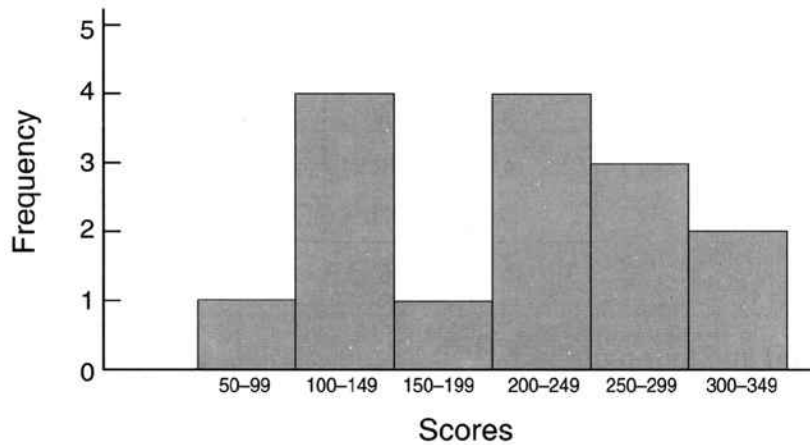
- $\sqrt{95} = 10$
- $\sqrt{95} < 10$
- $\sqrt{95} > 10$
- $\sqrt{95} < 9$

19. In the figure below, an arc of a circle with centre  $P$  has been drawn to cut the line at  $Q$ . Then an arc with the same radius and centre  $Q$  was drawn to cut the first arc at  $R$ . What would be the size of angle  $PQR$ ?



- $30^\circ$
- $45^\circ$
- $60^\circ$
- $75^\circ$

20. The graph below shows Tuau's scores from a computer game. Which one of these statements is **TRUE**?



- Tuau scored less than 100 more than once.
- Tuau scored more than 250 three times.
- Tuau scored less than 200 six times.
- Tuau scored between 300 and 349 on most occasions.

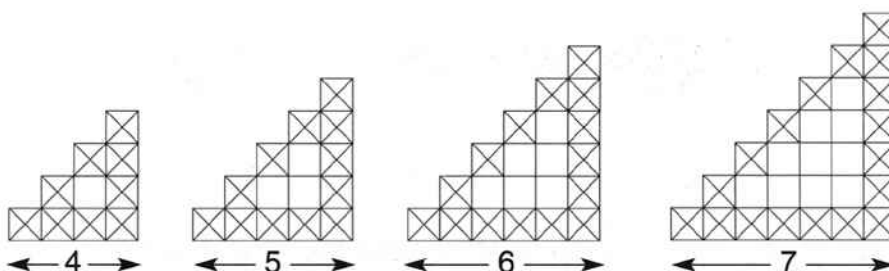
21. Mr Williams mixes white and brown paint in the ratio of 4:1.

If he uses 15 litres of white paint, how many litres of brown paint will he need?

- 3.25
- 3.5
- 3.75
- 4

Use the following information to answer question 22..

Huan investigated Tapatoru patterns.





He recorded his observations in the table below.

Number of squares across the bottom (n)	Number of crosses (c)
4	9
5	12
6	15
7	18

22. Which one of the following rules can Huan use to work out the number of crosses (c) in a pattern with any number of squares (n) on the bottom row?

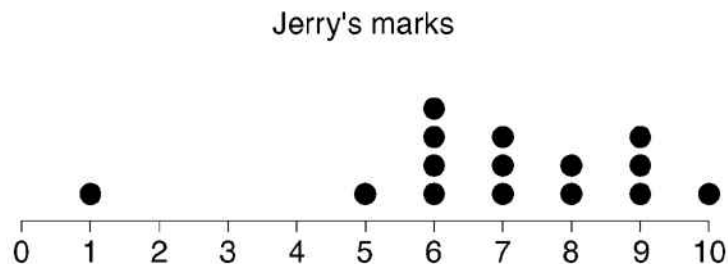
- $c = 3n$
- $c = n + 3$
- $c = n + 5$
- $c = 3n - 3$

End of Section

Use the following information to answer questions 23 to 24.

This dot plot shows the number of marks Jerry got in each of his weekly Mathematics quizzes.

The maximum number of marks in each quiz is 10.



23. Give the value of any outlier mark.

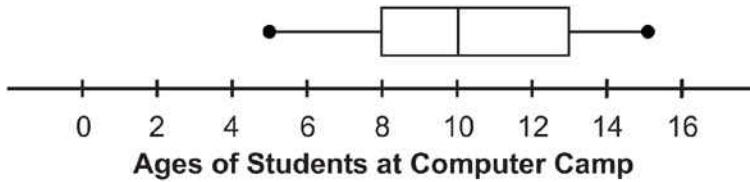
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24. What is the mode for this data?

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End of Section

25. During the summer, Mrs Duncan teaches at a computer camp for young people. The ages of the students during one session are summarised in this box-and-whisker plot.

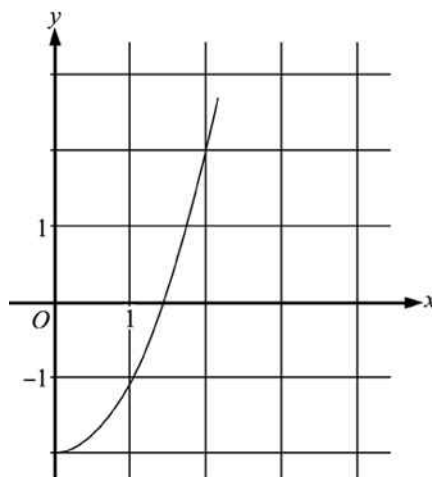


Which set of data could have been used to construct the box-and-whisker plot?

- 5, 8, 10, 10, 10, 13, 15
- 5, 8, 10, 10, 12, 14, 15
- 5, 6, 10, 10, 11, 15, 15
- 5, 7, 9, 10, 13, 14, 15

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26. On the curve below, what is the **BEST** estimate of the value of  $x$  when  $y = 0$ ?



- 2.0
- 1.1
- 1.4
- 1.7
- 1.9

27.  $2\sqrt{5}$  is between

- 2 and 3
- 4 and 6
- 6 and 9
- 9 and 12

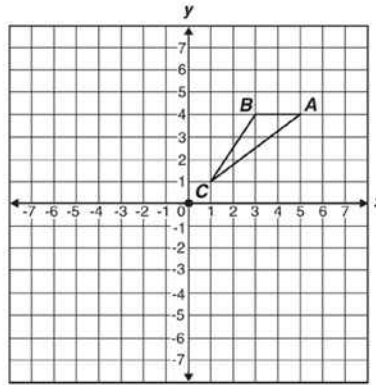
28. Which of the following is the value of  $a - 2b^2$  for  $a = 19$  and  $b = -2$ ?

- 3
- 11
- 27
- 35

29. A cellular phone company offers a 200-minute plan for \$29.95 per month, a 300-minute plan for \$39.95 per month, a 400-minute plan for \$49.95 per month and so on. Based on this information, which of the following conjectures is reasonable?

- A 100-minute plan costs \$9.95 per month.
- A 100-minute plan costs \$14.95 per month.
- A 500-minute plan costs \$69.90 per month.
- A 600-minute plan costs \$69.95 per month.

30. If triangle  $ABC$  is rotated 180 degrees about the origin, what are the coordinates of  $A'$ ?



- $(-5, -4)$
- $(-5, 4)$
- $(-4, 5)$
- $(-4, -5)$

31. Garvin made 16 litres of punch for a party. He mixed juice and ginger ale in a ratio of 3:1. He did not like the taste, so he added 4 more litres of ginger ale to the punch. The ratio of juice to ginger ale was then

- 1:1.
- 2:3.
- 3:1.
- 3:2.

32. A taxi company based its fares on the following chart. If the pattern continues, what would be the fare for a trip of 6 miles?

<b>Miles</b>	0.1	0.2	0.3	⋮	1.0	3.0
<b>Fare</b>	\$2.05	\$2.10	\$2.15	⋮	\$2.50	\$3.50

- \$3.00
- \$5.00
- \$11.00
- \$15.00

33.  $3^3 + 4(8 - 5) \div 6 =$

- 6.5
- 11
- 27.5
- 29
- 34.16

**34.** Simplify:  $2y(3x + 5y - 4)$

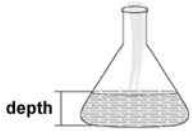
- $5xy + 10y - 8y$
- $5xy + 10y^2 + 8y$
- $6xy + 10y + 8y$
- $6xy + 10y^2 - 8y$

**35.** The mean distance from Venus to the Sun is  $1.08 \times 10^8$  kilometres.  
Which of the following quantities is equal to this distance?

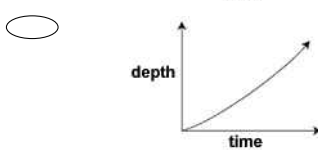
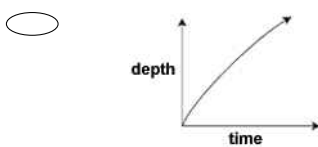
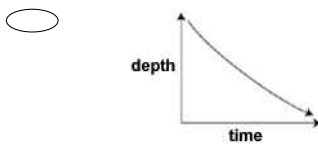
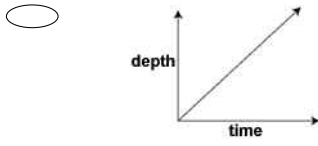
- 10 800 000 kilometres
- 108 000 000 kilometres
- 1 080 000 000 kilometres
- 10 800 000 000 kilometres
- 108 000 000 000 kilometres

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36. Water is poured into this flask at a constant rate.



Which one of these graphs could **BEST** represent the depth of water in the flask as it fills?

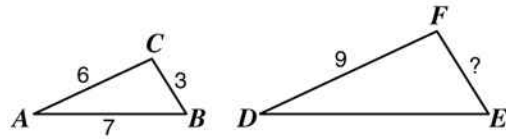


37.  $2\frac{1}{3} + 4\frac{1}{2} =$

- $6\frac{1}{6}$
- $6\frac{1}{5}$
- $6\frac{2}{5}$
- $6\frac{5}{6}$

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38. Triangles  $ABC$  and  $DEF$  are similar and have measurements as shown. What is the measure of  $\overline{EF}$ ?



- $\frac{21}{2}$
- $\frac{15}{2}$
- $\frac{9}{2}$
- $\frac{3}{2}$

39. The ten best players in the NBA scored these average points per game. 30, 37, 35, 33, 34, 32, 30, 33, 30, 29

Which box plot accurately shows these averages?

- 
- 
- 
-



40. Darrell had biology test scores of 76, 78, 76, 82, 62, and 100. For this data, which measure is greatest?

- Mean
- Median
- Mode
- Range

41. The average life spans of some animals are shown in the chart below. Based on the information given in the chart, which of the following statistics yields the greatest numerical value?

Animal	Average Life Span (in years)
Bear	22
Chicken	7
Deer	12
Dog	11
Duck	10
Elephant	35
Fox	9
Horse	22
Hippopotamus	30
Wolf	11

- Mean
- Median
- Mode
- Range

42. The stem-and-leaf plot below shows the ages of the people who bought skateboards at a store during a sale.

Ages of People

Stem	Leaf
1	1 3 4 5 5 6 6 6 8
2	0 1 7 8
3	9
4	3 6
6	5 5
7	1

What is the median age of the people who bought skateboards during the sale?

Median age \_\_\_\_\_

43. A rectangle has a perimeter of 68 centimetres. Its length is 2 centimetres less than 3 times its width.

What are the length and width of the rectangle?

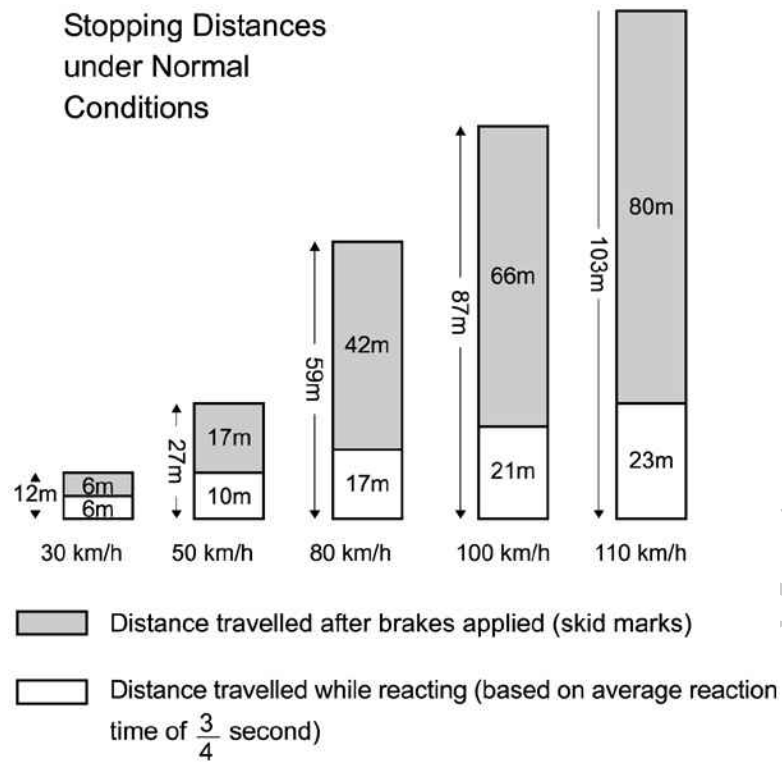
- Length = 22 cm, width = 12 cm
- Length = 25 cm, width = 9 cm
- Length = 28 cm, width = 10 cm
- Length = 22 cm, width = 8 cm

44. The sides of a square are 12 millimetres long.

What is the length of a diagonal?

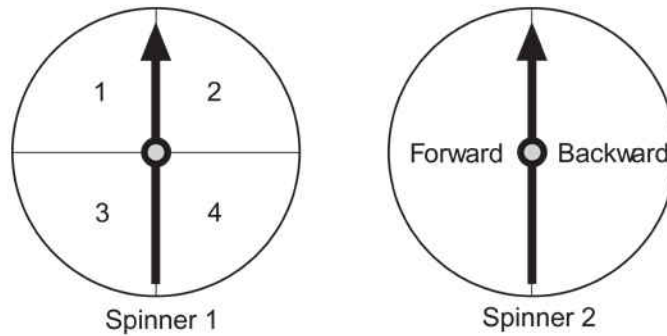
- 15.4 mm
- 16.7 mm
- 17.0 mm
- 14.9 mm
- 17.3 mm

45. At the scene of an accident, the police measured the length of the skid marks as 87m. According to the graph, what is the **BEST** estimate of the speed of the car before the driver applied the brakes?



- 100 km/h
- 110 km/h
- less than 100 km/h
- more than 110 km/h

**46.** Janet is playing a game using the two spinners shown below. She will spin the arrow on each spinner once and will move a specified number of steps forward or backward according to the results of the spins.  
 What is the probability that Janet will have to move backward less than 4 steps?

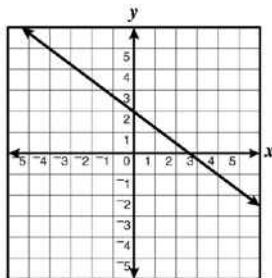
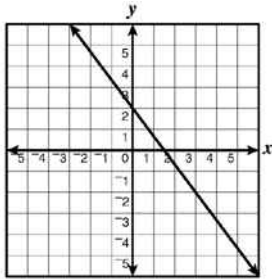
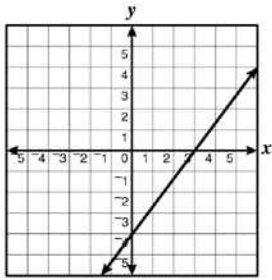
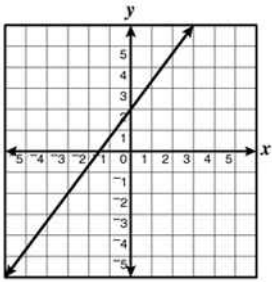


- $\frac{1}{8}$
- $\frac{3}{8}$
- $\frac{1}{2}$
- $\frac{3}{4}$

**47.** A school club uses a 45 seater bus for a trip to the wildlife park. The bus costs 600 centos (units of money) and the admission ticket for each student is 30 centos. The school charges each student 50 centos per person for the bus and admission.  
 What is the minimum number of students needed to ensure that these costs are covered?

- 12
- 20
- 30
- 45

48. Which graph **BEST** represents the function  $y = \frac{-4}{3}x + 2$ ?



49. What is the  $y$ -intercept of the line represented by the equation below?  
 $4x - 3y = 12$

-12

-4

4

12

50. What is the value of

$$5x - 6 + x^2y$$

when  $x = -1$  and  $y = 2$ ?

- 13
- 9
- 5
- 1

51. The concrete mixture for a footpath is made up of 1 part cement, 2 parts sand, and 4 parts red metal.

How much sand was used to make  $8.4 \text{ m}^3$  of concrete?

\_\_\_\_\_  $\text{m}^3$

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Please provide these instructions to all staff involved with administering e-asTTle online.

## Before the testing session

### 1. Make sure students have the right devices and browsers installed

Unsupported devices may result in the test not displaying correctly and affect students' scores.

#### Desktop/Laptop

- Windows, Mac or Chromebook
- Minimum window width: 1280 pixels
- Windows devices need up-to-date Edge, Chrome, Firefox or IE11
- Windows tablets/hybrids e.g., Surface Pro must have a keyboard attached
- Mac devices need recent Chrome or Safari

#### Large Tablets (9" +)

- iPads: iOS 10+ with Safari
- Androids: Large tablet e.g., Samsung Galaxy Tab 4. Must have Android 5+ and latest Chrome
- Minimum window width: 768 pixels

iPad Minis and small Androids must not be used.

More information on device requirements and the underlying rationale is available on the [help site](#).

### 2. Sit the Practice Test

[A practice test for each subject](#) is available. These are also available in the Student Portal (no login required). Practice tests are designed to familiarise you and your students with e-asTTle online before sitting a real test. Each practice test contains attitude questions, look-over time and 5-8 questions designed to be relatively simple to answer. [Teacher scripts](#) are available for practice tests.

### 3. Ensure you have student login information

More information on accessing student logins and resetting passwords is available on the [help site](#).

### 4. Check if calculators are required (Maths/Pāngarau)

Tests with questions at mostly Level 5 and 6 require the use of calculators. Tests with questions at mostly Levels 2 to 4 do NOT require a calculator.

## During the testing session

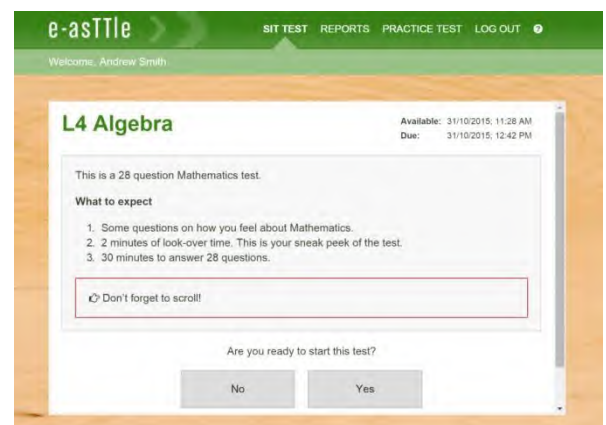
### 1. Check equipment

- Make sure students' devices are charged.
- Make sure students have scrap paper and a pen/pencil for working, calculators (if needed) and a quiet activity they can continue with if they finish early.

### 2. Read the Test Details to students

Once students select a test, they will see the test details page (example shown on right).

Read through this page aloud with your students.



Other reminders to discuss with students:

- Once they choose 'Yes', the timer starts. Once the timer is counting down, there is no way to pause the test. If students close the test accidentally, they can re-open it again, provided the timer hasn't finished.
- Ask students to raise their hand if something seems wrong.
- Fullscreen mode is recommended.

For students on iPad or Android tablet devices: remind them to lock their device in portrait mode.

For students on Windows hybrid devices (such as the Surface Pro): remind them to keep the keyboard attached during the test.

### 3. Supervising the test

Make sure you walk around and monitor students during the test. Students tend to continue with their test even if something has gone wrong – for example, a question does not display correctly. For this reason, check that pages are loading correctly, and students are scrolling to see all the content and options. It's a good idea to have a paper booklet of the test available during the testing session.

Students are generally expected to read the test content without assistance. Information on accommodations (e.g., reader-writers) is available on the [help site](#).

### 4. Know what to do if things go wrong


#### Internet disconnected

If student answers aren't saving, e-asTTle will show a yellow banner at the top of the page. The banner will turn red when there has been disconnection for 2 minutes or more. Students can keep answering whatever they can, and e-asTTle will try and save answers. Don't refresh or close the window if a coloured banner is showing.



If the Internet has been down, use your professional judgement to decide if students' results should be [excluded](#).

#### Images not loading

If an image is missing, students will see an icon they can click to try and reload the image.  **INFO MISSING**  
[Click to reload](#)

#### A question doesn't load fully or looks strange

If something has loaded incorrectly, it can sometimes be corrected by selecting the 'Next' button then the 'Previous' button to reload the question.

Detailed troubleshooting information is available on the [help site](#). To report issues with online testing or for additional assistance, please contact the Education Service Desk: 0800 225 5428.