

Summary

Test Identification

Name	2020 SW MY MATH 2.5
Date Created	18 May 2020
Date Modified	31 Jul 2020
Subject	Mathematics
Status	SCORED
Sequence Number	1024703
Total Test Time	57 minutes
Delivery Method	Onscreen

Curriculum Strand

Number Sense & Operations	10	Number Knowledge	11
Statistics	9	Algebra	13

Curriculum Level

4B	1	4P	2	4A	2
5B	4	5P	19	5A	7
6B	3	6P	2	6A	3

Cognitive Processing

Surface	23	Deep	20
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Slider Settings

Strands		Level	
Number Knowledge	Most	Level 4	Few
Number Sense & Operations	Most	Level 5	Most
Algebra	Most	Level 6	Few
Statistics	Most		

Marking Guide : 2020 SW MY MATH 2.5

Q.No	Marking Key
1	b
2	41 and 48 'Must have both'
3	a
4	b
5	d
6	a
7	b
8	c
9	a
10	b
11	a
12	c
13	26.915
14	b
15	c
16	e
17	Hundredths
18	0.06
19	a
20	b
21	c
22	b
23	a
24	b
25	d
26	b
27	c
28	c
29	11
30	(3x4) squared =12 squared or (1x12) squared = 12 squared 'Either answer for 1 mark.'
31	d
32	d

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
33	true, false, false 'All correct for 1 mark (Population, Sample, Sample)'
34	c
35	c
36	c
37	Are the numbers of pigs in her region increasing? OR How does my region compare with NZ for stock numbers? OR similar 'Must refer to her region. Could use words like "compare" or "explore" or "relationship" to indicate a suitable investigation'
38	Sample too small, or only samples people at home with telephone, or some houses do not have a phone, or similar.
39	There is a negative correlation; or, a few people have won a lot, or, the number of winners is inversely related to the prize money - or similar
40	b
41	Darlene: Town A grew by 60% and town B by 50% 'or equivalent'
42	The height of the golf ball when it is hit, and when it lands (i.e. when the ball is on the ground) 'For one mark must indicate both beginning and end of the ball"s travel.'
43	2 metres, because the ball height is 48 metres, thus clearing the 46 metre tree by 2 metres. 'Shows working to get this answer. Does not need to explain it in words.'

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 think maths is exciting and interesting.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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02. I never get tired of doing maths.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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03. I like to do and think about maths outside of school.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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04. I think maths helps me to understand life.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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05. I think that maths helps people make important decisions.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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06. Maths is NOT boring.

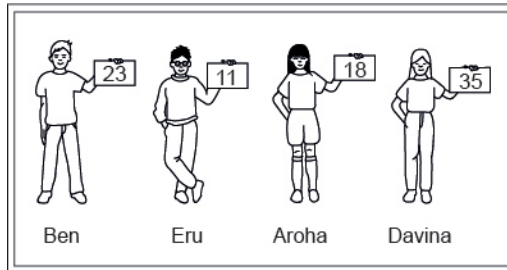
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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ADMINISTER ON SCREEN ONLY

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?

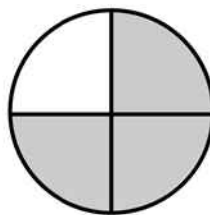


- Ben
- Eru
- Aroha
- Davina

P02. Complete this number pattern.

2, 4, _____, _____, 10

P03. What fraction of this circle is shaded?

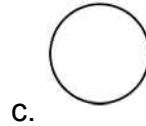
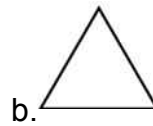




P04. Match the sentence with the correct shape.

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. $A = \{2, 3, 5, 7, 11, 19, 23, 29\}$

Which of the following is a **TRUE** statement concerning A ?

- All numbers in A are odd.
- All numbers in A are prime.
- All numbers in A are even.
- All numbers in A are composites.

02. Which two numbers in the bottom line complete this pattern?

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

03. Shannon read that fourteen thousand, nine hundred and eighty-seven people live in Dukes County.

Which of the following is another way to write this number?

- $10\,000 + 4000 + 900 + 80 + 7$
- 14 000 987
- $14 \times 100 + 9 \times 10 + 87$
- $1 + 4 + 9 + 8 + 7$

04. Which of these numbers has the three in the tenths place?

- 3.475
- 4.375
- 27.435
- 32.75

05. Which goes in the blank to make the statement **TRUE**?

2.301 > _____

- 23.1
- 2.3010
- 2.310
- 2.13

06. Which group of numbers contains **only** prime numbers?

- 2, 3, 13
- 3, 9, 13
- 9, 12, 13
- 2, 3, 4

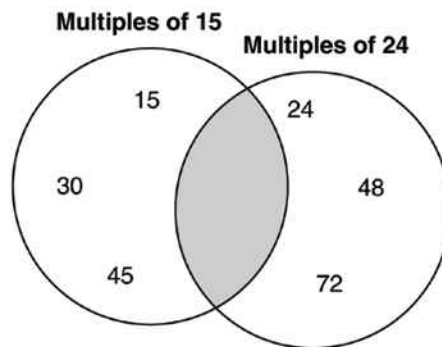
07. 125% is the same as

- 0.125
- 1.25
- 12.5
- 125.0

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08. Sarah is filling numbers in the Venn diagram. No number is to be entered more than once.

What is the **least** number that can be appropriately placed in the shaded area of the diagram?



- 360
- 240
- 120
- 60

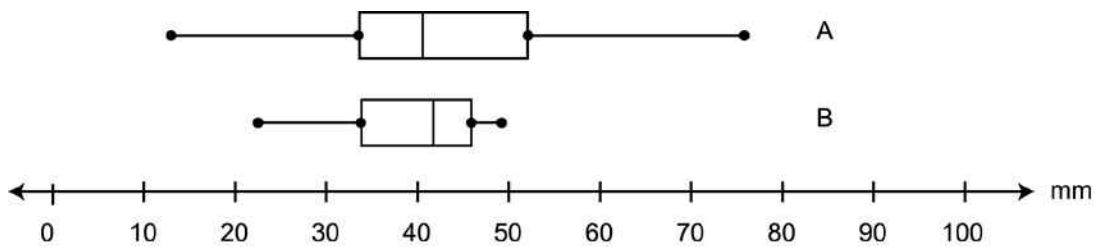
09. The expression below represents the amount of money in Jaime's savings account.

$$2000\left(1 + \frac{0.04}{2}\right)^3$$

Which of the following is closest to the amount of money in Jaime's savings account?

- \$2120
- \$2250
- \$6120
- \$6240

10. The box plots show the scores gained by two mathematics classes. Which of the following statements is a correct comparison of the data?



- Class A has a higher median and shows more variability than Class B.
- Class A has a lower median and shows more variability than Class B.
- Class A has a higher median and shows less variability than Class B.
- Class A has a lower median and shows less variability than Class B.

11. Which of the following lists the numbers in order from least to greatest?

- 17.3 % , 17.33, $17\frac{1}{3}$, 17.34
- 17.33, $17\frac{1}{3}$, 17.3 % , 17.34
- 17.34, 17.33, $17\frac{1}{3}$, 17.3 %
- 17.3 % , 17.33, 17.34, $17\frac{1}{3}$

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12. Soccer is the world's most popular sport. The table lists the records of five World Cup winners.

What was the mean number of total points scored by these teams?

Country	Games Won	Games Lost	Ties	Total Points
Argentina	24	15	9	57
Brazil	44	11	11	99
England	18	11	12	48
Italy	31	11	12	74
West Germany	39	14	15	93

- 51
- 74
- 74.2
- 99

13. Using the digits 1, 2, 5, 6 and 9 write a number that has a 1 in the hundredths column, a 2 in the tens column, a 5 in the thousandths column, a 6 in the ones column and a 9 in the tenths column.

14. Which is the **BEST** approximation of $\sqrt{72}$?

- 8.4
- 8.5
- 8.9
- 8.6

15. What value for t makes this equation **TRUE**?

$$\frac{1}{2}(t + 7) = 48$$

- 17
- 31
- 89
- 103

16. If the pattern shown in the table were continued, what number would appear in the box at the bottom of column B next to 14?

A	B
2	5
4	9
6	13
8	17
~~~~~	
14	?

- 19
- 21
- 23
- 25
- 29

Use the following information to answer questions 17 to 18.

What is the place value and total value of the six in this decimal?

3.964

17.

Place Value _____

18.

Total Value_____

End of Section

19. Which of the following pieces of information would **NOT** be useful in deciding what type of car is the **MOST** economical to drive?

- Median income of drivers
- Range of insurance costs
- Average kilometres per litre
- Typical cost of repairs per year
- Cost of routine maintenance

20. The prices of petrol in a certain region are \$1.41, \$1.36, \$1.57, and \$1.45 per litre. What is the median price per litre of petrol in this region?

- \$1.41
- \$1.43
- \$1.44
- \$1.45
- \$1.47

21. Of the following, which is the **closest** approximation of a 15 percent tip on a restaurant bill of \$24.99?

- \$2.50
- \$3.00
- \$3.75
- \$4.50
- \$5.00

Use the following information to answer question 22..

Sales staff at a home appliance store are paid by their employer in different ways. Kiri is paid \$200 a week and \$50 for each appliance sold. Ngaire is paid \$60 for each appliance sold.

Kiri's pay can be calculated by the equation  $y = 50x + 200$  and  
Ngaire's pay by the equation  $y = 60x$   
where  $y$  represents the pay and  $x$  represents the number of appliances sold.

22. Use the information below to answer the question.

If both of these equations are graphed, the point of intersection of the 2 lines shows the value where:

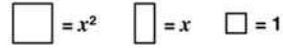
- i They have sold the same number of appliances.
- ii They have earned the same amount of money.
- iii They have finished for the day.
- iv Some of the appliances will break down and need repair.

What is the **BEST** conclusion about the point of intersection?

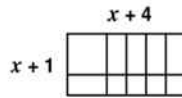
- ii and iii
- i and ii
- i and iii
- i and iv

**23.** Consider the models in Part A.  
Which expression represents the area of the diagram in Part B?

**PART A**



**PART B**



- $x^2 + 5x + 4$
- $2x + 5$
- $4x + 10$
- $x^2 + 4$

**24.** What is the value of  $\frac{2}{3} - \frac{1}{4} - \frac{1}{12}$ ?

- $\frac{1}{6}$
- $\frac{1}{3}$
- $\frac{3}{8}$
- $\frac{5}{12}$
- $\frac{1}{2}$

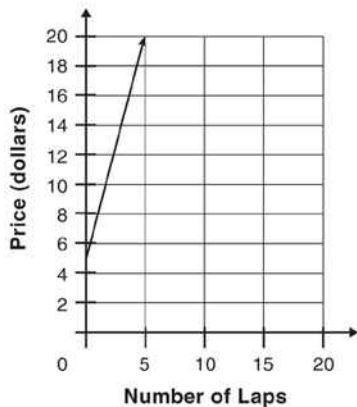
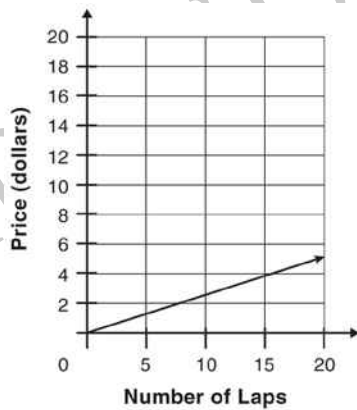
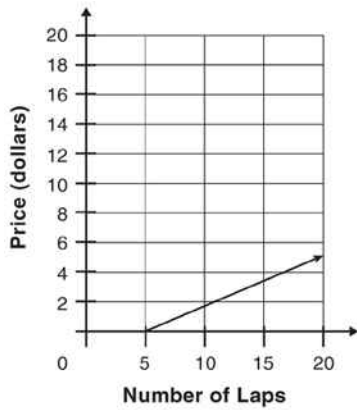
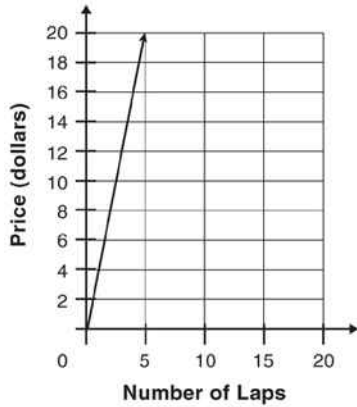
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25. The table below shows the charges for renting and racing a go-cart. Which graph **BEST** represents these prices?

Grand Prix Go-Carts

Number of Laps	0	1	2	3	4	5
Price (dollars)	5	8	11	14	17	20



**26.** 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

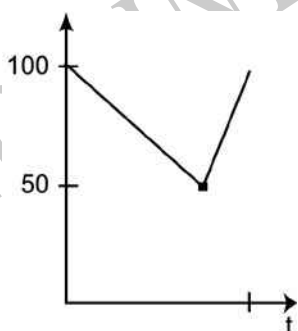
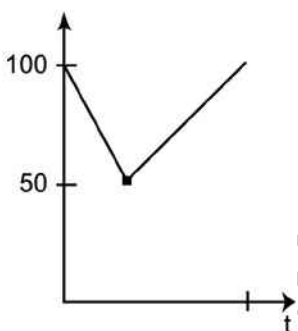
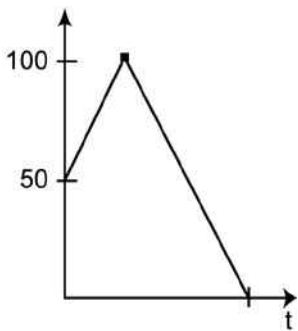
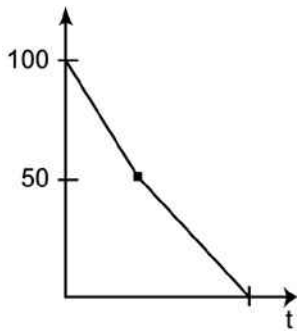
**Use the following information to answer question 27..**

A 100 litre tank filled with water leaked at a constant rate of 2 litres per hour.

The tank continued to leak, and when it was half full, it was filled again at a rate of 3 litres per hour.

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27. Which graph best shows the capacity in the tank (litres) as a function of the time (hours)?



End of Section

28.

$$\square \times \square = 41$$

The  $\square$  can be replaced by:

- $41^2$
- $4^2 + 5^2$
- $\sqrt{41}$
- $\frac{41}{2}$

Answer questions 29 to 30.

29.

$$8 + 6 \div 2 = \underline{\hspace{2cm}}$$

30.

$$3^2 \times 4^2 = (\underline{\hspace{2cm}} \times \underline{\hspace{2cm}})^2 = \underline{\hspace{2cm}}^2$$

End of Section

31. If the pattern in the table continues, which of the following expressions represents  $a_n$ ?

n	1	2	3	4	5	6
$a_n$	0	3	8	15	24	35

- $2^n - 1$
- $(n - 1)^2$
- $3(n - 1)$
- $n^2 - 1$

**32.** Tykwan guides groups on bush walks. He is paid \$15 per group for the short walks and \$20 per group for the long walk.

If 80% of Tykwan's groups take the short walk, what is the total number of groups he must guide to earn a total of \$400?

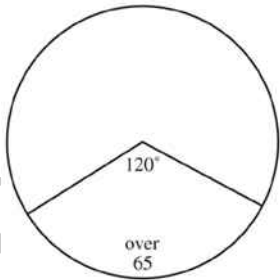
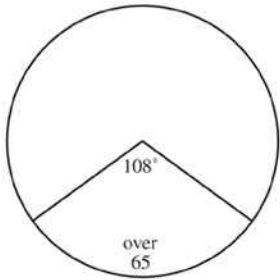
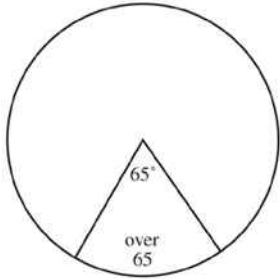
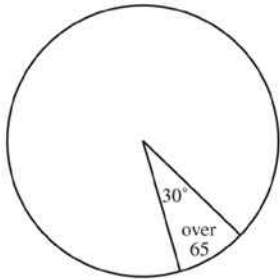
- 5
- 12
- 20
- 25

**33.** A factory manufactures washing machines, and conducts tests before they leave the factory.

For each of the following tests, state whether you would use the **Population** or a **Sample** of washing machines manufactured.

	<b>Population</b>	<b>Sample</b>
Test the on/off switch to see if the washing machine works.	<input type="radio"/>	<input type="radio"/>
Test the machine to see how many hours it will last before it breaks down.	<input type="radio"/>	<input type="radio"/>
Test the machine with a load of dirty football jerseys to check that it washes properly.	<input type="radio"/>	<input type="radio"/>

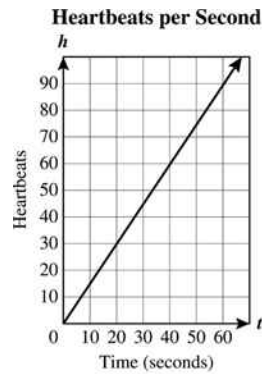
34. Amy drew a circle graph to represent the ages of people who were surveyed for a consumer group. Of those surveyed, 30% were over the age of 65. Which one of the following graphs **BEST** represents the survey results?



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35. Sharona found the number of times her heart beat in 10, 20, 30, 40, 50, and 60 seconds. She made a graph of the results.

Which equation does Sharona's graph represent? Use  $h$  to represent "heartbeats" and  $t$  to represent "time in seconds".



- $t = 1.5h$
- $t = h + 10$
- $h = 1.5t$
- $h = t + 10$

36. Which equation is equivalent to  $4(2 - 5x) = 6 - 3(1 - 3x)$ ?

- $8x = 5$
- $8x = 17$
- $29x = 5$
- $29x = 17$

37. A farming advisor has information about the number of pigs, sheep and cattle in her local region, and for the whole of New Zealand. She is keen to know how her region is performing in terms of stock numbers.

Write a statistical question suitable for her investigation.

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**38.** An ACC safety officer wanted to know whether their last month's television campaign in safety in the household was successful. She did a telephone survey of 50 Wellington households. What is one possible limitation in her survey?

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**Use the following information to answer question 39..**

The operators of a casino recorded the number of people playing jackpot type games and recorded their winnings.

No of players	25	100	250	500	1000	5000	10000
Prize\$	5000	300	1000	500	100	50	10

**39.** What can you conclude about the relationship between the number of players and the prize money?

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End of Section

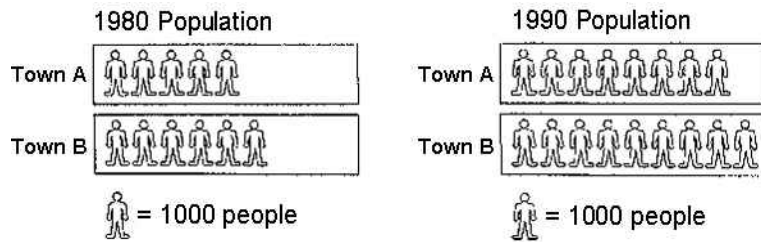
**40.** Ticket sales at the First Run Theatre total at least \$7,600 per week. An adult's ticket costs \$7.50 and a child's ticket costs \$4.00. If  $a$  represents the number of adult tickets sold in a week and  $c$  represents the number of child tickets, which algebraic sentence represents the money received each week from ticket sales?

- $7.50a + 4.00c = 7600$
- $7.50a + 4.00c \geq 7600$
- $7.50a + 4.00c > 7600$
- $7.50a + 4.00c < 7600$



Use the following information to answer question 41..

In 1980, the populations of Town A and Town B were 5000 and 6000 respectively. The 1990 populations of Town A and Town B were 8000 and 9000 respectively.



41. Darlene claims that from 1980 to 1990 the population of Town A had grown more.

Explain how Darlene might have justified her claim.

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Use the following information to answer questions 42 to 43.

Russell hits a golf ball, the path of which can be approximated by the equation shown below.

$$y = \frac{-1}{400} (x - 140)^2 + 49$$

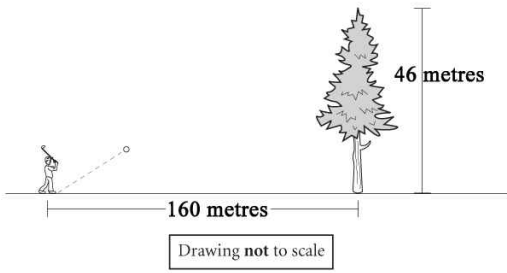
$y$  = height of the balls, in metres  
 $x$  = horizontal distance, in metres

42. What do the  $x$ -intercepts represent in the context of the problem? Explain your reasoning.

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43. Study the diagram below. The diagram shows a tree at a horizontal distance of 160 metres from the starting point of the ball. The tree is 46 metres tall.



By how many metres will the ball clear the tree?

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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

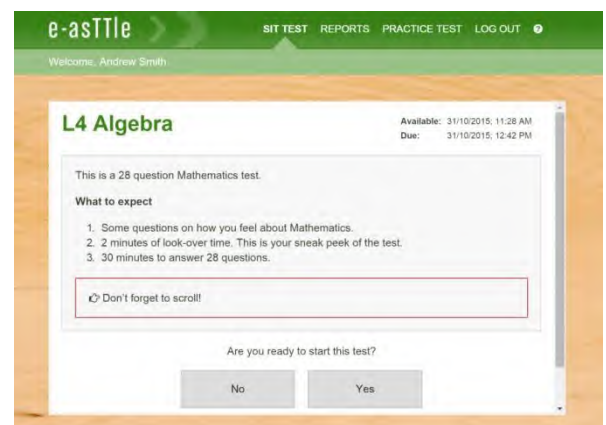
### 1. Check equipment

- 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.