

## Summary

### Test Identification

<b>Name</b>	2016 MAT SW 2.5
<b>Date Created</b>	09 May 2016
<b>Date Modified</b>	30 May 2017
<b>Subject</b>	Mathematics
<b>Status</b>	SCORED
<b>Sequence Number</b>	596943
<b>Total Test Time</b>	57 minutes
<b>Delivery Method</b>	Onscreen

### Curriculum Strand

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

### Curriculum Level

<b>4B</b>	1	<b>4P</b>	0	<b>4A</b>	1
<b>5B</b>	11	<b>5P</b>	19	<b>5A</b>	16
<b>6B</b>	0	<b>6P</b>	1	<b>6A</b>	0

### Cognitive Processing

<b>Surface</b>	15	<b>Deep</b>	34
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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 : 2016 MAT SW 2.5**

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

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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
28	c
29	c
30	d
31	c
32	c
33	c
34	d
35	a
36	d
37	c
38	b
39	b
40	\$28.20
41	d
42	a
43	c
44	a
45	b
46	c
47	b
48	b
49	c

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Instructions

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**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.

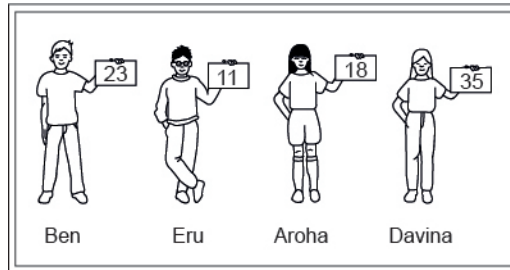
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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ADMINISTER ONSCREEN ONLY

## 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?

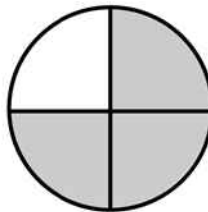


- Ben
- Eru
- Aroha
- Davina

**P02.** Complete this number pattern.

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

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



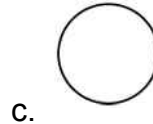
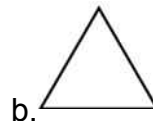
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**P04.** Match the sentence with the correct shape.

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.

**ADMINISTER ONSCREEN ONLY**

01. Which row correctly shows equivalent fractions?

- $\frac{1}{2}, \frac{2}{4}, \frac{3}{4}$
- $\frac{2}{4}, \frac{4}{8}, \frac{8}{32}$
- $\frac{3}{4}, \frac{6}{8}, \frac{6}{16}$
- $\frac{2}{4}, \frac{3}{6}, \frac{4}{8}$

02. Tim has \$700 in his cheque account and \$650 in his savings account. He deposits \$50 from each pay into his cheque account. If he deposits \$100 into his savings account every other month, how many years will it take him to save \$20,000 in his savings account?

Identify the unnecessary information in the problem.

- Tim has \$650 in his savings account.
- Tim wants to save \$20 000 in his savings account.
- Tim deposits \$50 from each pay into his cheque account.
- Tim deposits \$100 into his savings account every other month.

03. Which of the following has a value greater than  $\frac{5}{6}$  ?

- $\frac{5}{9}$
- $\frac{2}{3}$
- $\frac{11}{12}$
- $\frac{10}{12}$



**04.** Raewyn is a science fiction fan and wants to investigate the popularity of new science fiction books.

She thinks of several ideas for conducting her research.

The **BEST** of these ideas for her investigation would be to

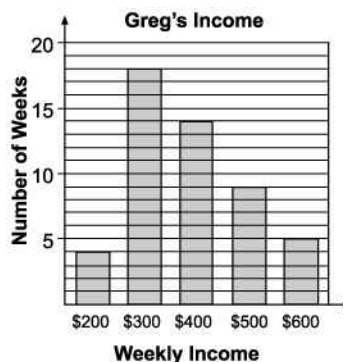
- measure the proportion of the shelf space that science fiction books take up at the local library.
- obtain the attendance figures for science fiction movies at the local cinema for the past year.
- ask all the students in her class whether they like science fiction books.
- obtain information from the booksellers' association about the proportion of science fiction books sold.

**05.** The solution of the equation  $3(4x - 3) = 15$  is

- 5
- 2
- 2
- 4

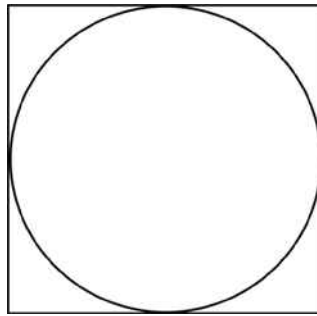
**06.** Greg is self-employed, and his weekly income varies. The bar graph below displays the number of weeks in which he earned each of the amounts shown.

Based on the bar graph, what is Greg's median weekly income?



- \$300
- \$400
- \$500
- \$600

**07.** The length of a side of the square below is 6.  
What is the length of the radius of the circle?



- 2
- 3
- 4
- 6
- 8

**08.** The Math Club purchased 150 calendars for \$2.00 each.  
If the club sells the calendars for \$5.00 each, what will be the total profit if all the calendars are sold?

- \$750.00
- \$450.00
- \$300.00
- \$3.00

**09.** A rock that weighed 1.2 kilograms on the moon weighed 7.06 kilograms on Earth.  
About how much would a lion which weighs 87 kilograms on Earth weigh on the moon?

- 7.25kg
- 12.325 kg
- 14.79 kg
- 511.77 kg

10. Which is the closest to the value of  $x$  if  $x = 2\sqrt{7}$ ?

- 3.2
- 3.7
- 5.3
- 9.9

11. Peggy is stocking boxes of cereal on a shelf in the supermarket. She has 48 boxes of corn flakes and 72 boxes of bran flakes. The boxes are to be arranged so each row has the same number of boxes and only one kind of cereal.

What is the **greatest** number of boxes that can be in each row?

- 8
- 9
- 12
- 24

12. The number of calculators sold in the school bookstore for the month of September is shown in the table below.

Based on the data shown, what is the probability that the next calculator sold will be a graphing calculator?

Calculators Sold in September

Calculator Type	Number Sold
graphing	15
scientific	28
four function	25
other	12

- About 15 %
- About 19%
- About 23%
- About 25%

13. For which of the following values of  $x$  and  $y$  is the following inequality **TRUE**?

$$x < \sqrt{14} < y$$

- $x = 2.5$  and  $y = 3.0$
- $x = 3.0$  and  $y = 3.5$
- $x = 3.5$  and  $y = 4.0$
- $x = 4.0$  and  $y = 4.5$

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

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

15. A 45 000 litre water tank is being filled at the rate of 220 litres per minute. Estimate, to the nearest half an hour, how long it will take to fill the tank.

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

16. 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

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?

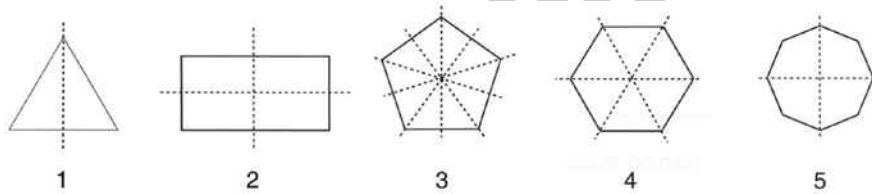
- Mean, median and mode
- Mean and median
- Mean only
- Median only

18. Angus was planning a survey on the smoking habits of teenagers. He made a list of possible samples to use.

- I A group of students who smoke down on the football field.
  - II A group of teenaged friends found in a nightclub on Friday night.
  - III A group of students chosen by taking every tenth person on the school roll.
  - IV A group of teenagers from the local church youth group.
  - V Every fifth teenager going through the gate at the Big Day Out concert.
- Which samples would be **MOST** likely to give a reasonably accurate picture for his survey?

- I and II
- I and III
- II and IV
- III and V
- IV and V

19. Which **TWO** of the shapes below have **ALL** of their mirror lines drawn?



- 1 and 2
- 2 and 3
- 3 and 4
- 4 and 5

20. What is the **least** whole number  $x$  for which  $2x > 11$ ?

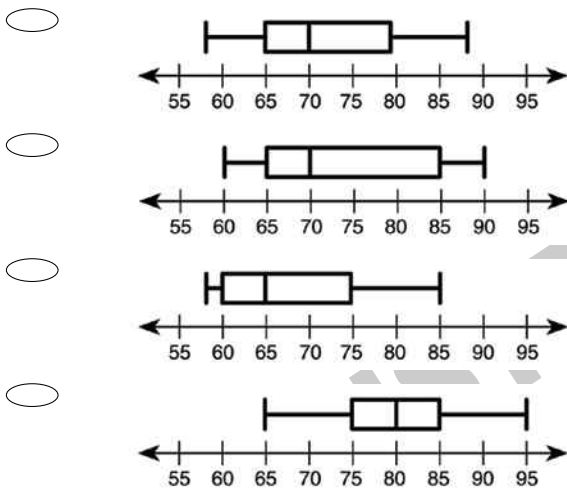
- 5
- 6
- 9
- 22
- 23

21. A study was conducted to determine the effectiveness of a speed limit sign.

The speeds of cars at the 65 kph sign were:

79, 60, 70, 65, 70, 85, 74, 58, 71, 88, 65,

Which box-and-whisker plot correctly displays the information?

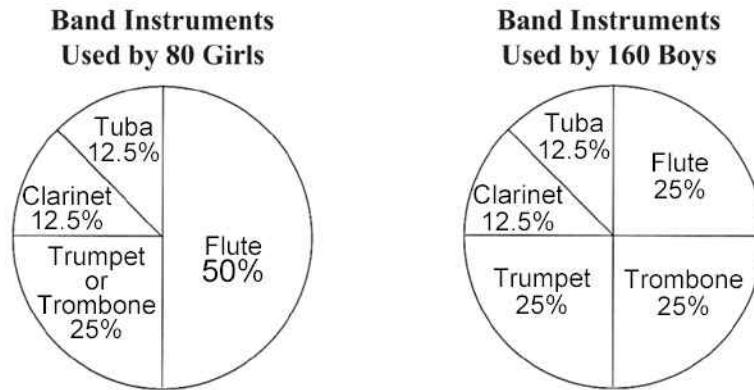


22. 7, 7, 7, 7, 14

For the scores above, which one of the following does **NOT** equal seven?

- Mean
- Median
- Mode
- Range

23. According to these two circle graphs, which statement is correct?



- The same number of boys and girls play the tuba.
- The same number of boys and girls play the flute.
- The number of boys playing either the tuba or the clarinet is the same as the number of girls playing the tuba or the clarinet.
- Fifty girls play the flute.

24. The box-and-whisker plot shown below represents 600 scores on a district geometry test.

How many students scored between 42 and 56?



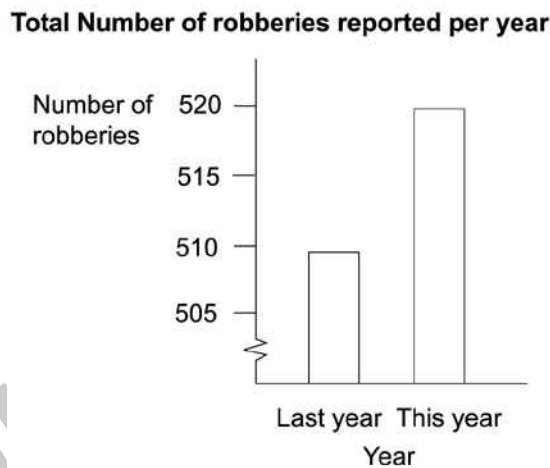
- 84
- 150
- 300
- 450



**25.** Mari's teacher put a red dot on 1, 4, 9, and 16 on a number line. The teacher asked Mari to continue the same pattern by putting 3 more dots on the same number line. Which number did Mari put the third dot on?

- 23
- 25
- 36
- 49

**26.** A TV documentary showed this graph, and the reporter said: "There has been a huge increase in the number of robberies this year." Was the reporter's statement a reasonable interpretation of the graph? Choose the correct response:



- Yes. There were 520 robberies this year.
- Yes. Robberies were double this year.
- No. Approximately 500 robberies are not very many.
- No. The graph shows a small overall increase in the number of robberies.

27. Imagine a monetary system in which the only paper notes available are worth \$81, \$27, \$9, \$3, and \$1.

What is the fewest number of notes that could be used to pay a bill of \$275 exactly?

- 5
- 7
- 9
- 12

28. What is the value of the expression below?

$$14 - 4[2 + 3(8 - 5)]$$

- 150
- 69
- 30
- 46

29. The chart below shows the approximate distances of various towns and cities from Williams.

Which is the **closest** to the mean of the seven distances listed in the chart?

Town or City	Distance (kilometres)
Ash Fork	19
Drake	36
Flagstaff	28
Red Lake	9
Seligman	42
Kingman	117
Parks	14

- 9 kilometres
- 28 kilometres
- 38 kilometres
- 40 kilometres

30. What is the order from smallest (least) to largest (greatest)?

$$P = 5.7 \times 10^3$$

$$Q = 3.9 \times 10^{-2}$$

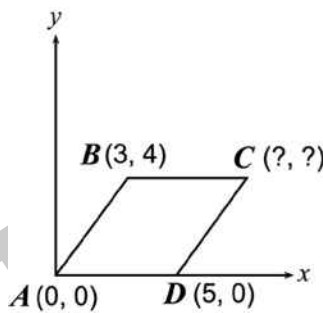
$$R = 1.8 \times 10^3$$

$$S = 8.2 \times 10^{-2}$$

- P, Q, R, S
- S, Q, R, P
- R, Q, P, S
- Q, S, R, P

31.  $ABCD$  is a rhombus.

What are the coordinates of vertex  $C$ ?



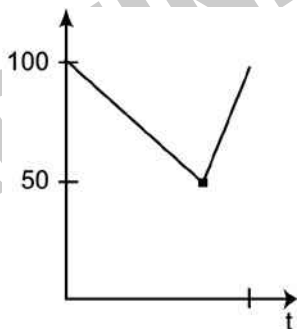
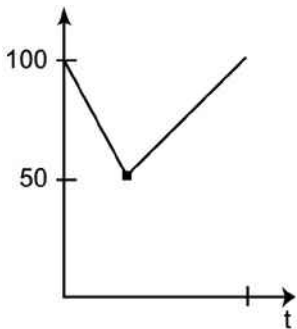
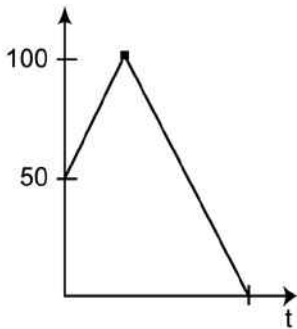
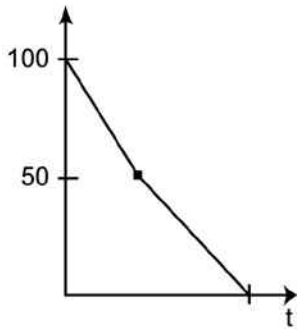
- (5, 4)
- (6, 4)
- (8, 4)
- (4, 3)

Use the following information to answer question 32..

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.

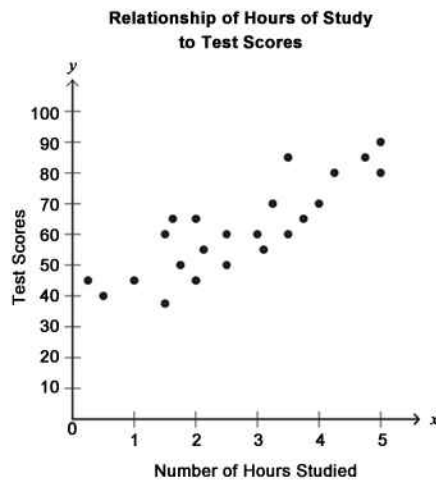
32. Which graph best shows the capacity in the tank (litres) as a function of the time (hours)?



End of Section

33. Ms Kramer asked her students to report the number of hours they studied for their statistics test. The day after the test, she plotted the results on the scatterplot shown below.

Which of the following equations correctly approximates the line of best fit?



- $y = -10x + 30$
- $y = -10x + 60$
- $y = 10x + 30$
- $y = 10x + 60$

34. Which equation could have been used to create this function table?

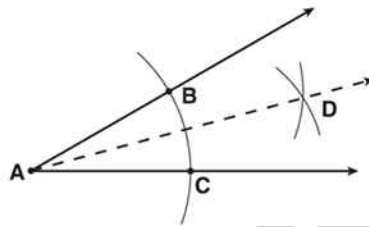
$x$	$y$
-9	-5
-2	2
4	8
11	15

- $y = \frac{x}{2}$
- $y = 2x$
- $y = x - 4$
- $y = x + 4$

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

- Mean
- Median
- Mode
- Range

36. Given: angle A  
What is the first step in constructing the angle bisector of angle A?



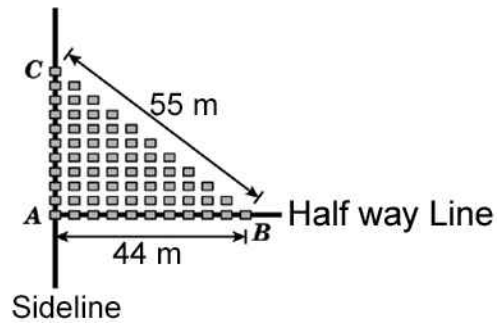
- Draw ray  $AD$ .
- Draw a line segment connecting points  $B$  and  $C$ .
- From points  $B$  and  $C$ , draw equal arcs that intersect at  $D$ .
- From point  $A$ , draw an arc that intersects the sides of the angle at points  $B$  and  $C$ .

37. Audrey is given the following problem to solve. Audrey has to solve for  $a$  and  $b$ . Which of the following is **NOT** possible?

$$\begin{array}{r} aba \\ + ab \\ \hline a77 \end{array}$$

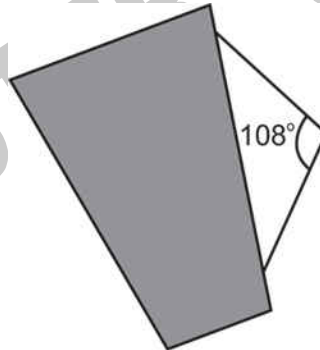
- $b$  is odd and greater than  $a$
- $a$  is even and smaller than 5
- $a$  and  $b$  are both odd numbers
- $a$  and  $b$  are both prime numbers

38. Margo is designing a band formation for a halftime ceremony at a football game. This drawing shows where the band members will stand during the ceremony. How many metres apart are the band members standing at point  $A$  and  $C$ ?



- 11
- 33
- 44
- 55

39. In the drawing below, a regular polygon is partially covered as shown. How many sides does the covered polygon have?



- 4
- 5
- 6
- 8

Use the following information to answer question 40..

Jane started a lawn mowing round to earn extra pocket money. She decided to charge  $C$  dollars, according to the time taken ( $t$ ) in hours and the amount of petrol ( $p$ ) used in litres.

She came up with the formula  $C = 12t + 1.2p$

40. She worked for 2 hours and used 3.5 litres of petrol.

How much should she charge?

\$ \_\_\_\_\_

End of Section

41. The table shows the mean number of points scored per game by four professional basketball players in four seasons.  
Which player had the greatest range of mean points per game for the seasons shown in the table?

MEAN POINTS SCORED PER GAME

Player	Season			
	1998-1999	1999-2000	2000-2001	2001-2002
Alonzo Mourning	20.1	19.2	19.8	23.2
Tim Hardaway	17.4	18.9	20.3	17.2
Jamal Mashburn	14.8	15.1	13.4	10.6
Terry Mills	9.0	14.2	10.8	9.4

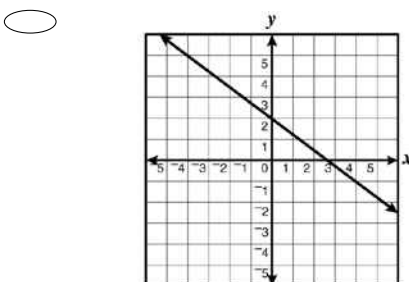
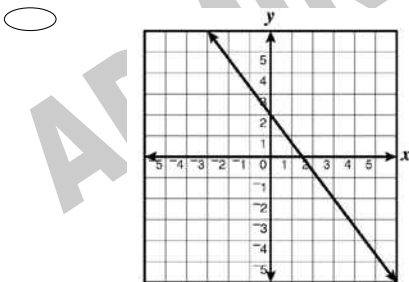
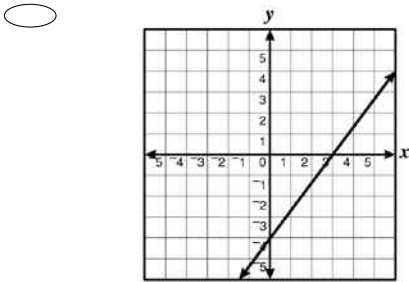
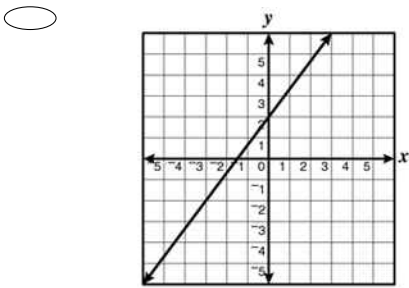
- Alonzo Mourning
- Tim Hardaway
- Jamal Mashburn
- Terry Mills



42. When completely factored,  
 $4 - 16x + 28y$  equals

- $4(1 - 4x + 7y)$
- $4(1 - 4x) + 28y$
- $(4 - 7y)(1 + 4x)$
- $4 - 4(4x - 7y)$

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



44. Part of the statement below is circled.  
Which **BEST** describes the circled part of the statement?

$$\textcircled{3}x + 5 = 21$$

- Coefficient
- Variable
- Term
- Expression

45. Which of the following is an example of dependent events?

- Flipping a fair coin twice and getting tails both times.
- Choosing the starting player line-up for a basketball game.
- Choosing two cards from a stack of coloured cards, with replacement, and both cards are blue.
- Rolling a 6-sided die two times and getting five both times.

46. What is the value of  $3x^2 - y^2$  if  $x = -1$  and  $y = 3$ ?

- 12
- 3
- 6
- 12

47. The volume of a cylinder is given by

$$V = \pi r^2 h$$

where  $r$  is the radius of the cylinder and  $h$  is the cylinder's height.  
Which equation could be used to solve for  $h$ ?

$h = \pi r^2 V$

$h = \frac{V}{\pi r^2}$

$h = V + \pi r^2$

$h = V - \pi r^2$

48. Which is the solution set for the equation below?

$$x^2 - 4 = 0$$

$(-4, 1)$

$(-2, 2)$

$(-1, 4)$

$(0, 4)$

49. What is the factored form of

$$3a^2 - 24ab + 48b^2?$$

$(3a - 8b)(a - 6b)$

$(3a - 16b)(a - 3b)$

$3(a - 4b)(a - 4b)$

$3(a - 8b)(a - 8b)$

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 Internet Explorer 9-11 or recent Edge, Chrome, Firefox
- Windows tablets/hybrids e.g., Surface Pro must have a keyboard attached
- Mac devices need recent Chrome or Safari

#### Tablet (9"+)

- iPads: iOS8+ with Safari
- Androids: Large tablet e.g., Samsung Galaxy Tab 4. Must have Android 4.4+ 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

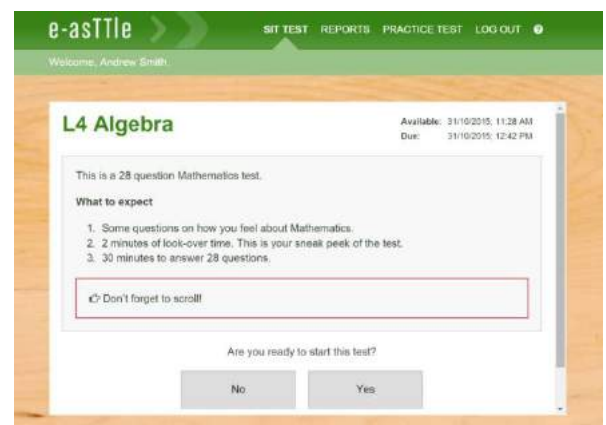
### 1. Check equipment

- 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.