

## Summary

### Test Identification

<b>Name</b>	2020 MAT SW 1.5
<b>Date Created</b>	29 Jan 2020
<b>Date Modified</b>	06 Mar 2020
<b>Subject</b>	Mathematics
<b>Status</b>	SCORED
<b>Sequence Number</b>	1005055
<b>Total Test Time</b>	57 minutes
<b>Delivery Method</b>	Onscreen

### Curriculum Strand

<b>Number Sense &amp; Operations</b>	9	<b>Number Knowledge</b>	11
<b>Statistics</b>	12	<b>Algebra</b>	13

### Curriculum Level

<b>4B</b>	1	<b>4P</b>	2	<b>4A</b>	3
<b>5B</b>	7	<b>5P</b>	13	<b>5A</b>	13
<b>6B</b>	2	<b>6P</b>	4	<b>6A</b>	0

### Cognitive Processing

<b>Surface</b>	20	<b>Deep</b>	25
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### Slider Settings

<b>Strands</b>		<b>Level</b>	
<b>Number Knowledge</b>	Most	<b>Level 4</b>	Few
<b>Number Sense &amp; Operations</b>	Most	<b>Level 5</b>	Most
<b>Algebra</b>	Most	<b>Level 6</b>	Few
<b>Statistics</b>	Most		

## Marking Guide : 2020 MAT SW 1.5

Q.No	Marking Key
<b>1</b>	c
<b>2</b>	3
<b>3</b>	b
<b>4</b>	d
<b>5</b>	6 033 103
<b>6</b>	a
<b>7</b>	d
<b>8</b>	d
<b>9</b>	b
<b>10</b>	d
<b>11</b>	b
<b>12</b>	c
<b>13</b>	a
<b>14</b>	b
<b>15</b>	a
<b>16</b>	d
<b>17</b>	c
<b>18</b>	d
<b>19</b>	1/50
<b>20</b>	62 1/2 % or 62.5%
<b>21</b>	0.36
<b>22</b>	b
<b>23</b>	The number of visitors increased each month from March to July, decreased sharply in August, and continued to fall in September. 'One mark. Accept similar description that covers the total period.'
<b>24</b>	a
<b>25</b>	524 metres
<b>26</b>	\$2200 and \$1100 so Plan I
<b>27</b>	44 'Suitable working shown'
<b>28</b>	Plan I = \$2440 and Plan II = \$2420 'Working and/or explanation shown for each result'

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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
<u>29</u>	Plan I gives $\$2000+49*\$10=\$2490$ . Plan II gives $49*\$55 = \$2695$ so Plan II is better 'Correct answers and appropriate explanation for choice'
30	c
31	c
32	a
33	d
34	b
35	b
36	c
37	c
38	a
39	d
<u>40</u>	6
41	c
42	a
<u>43</u>	1.45, 1.55 'Both required for 1 mark.'
44	a
45	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 (-).

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.

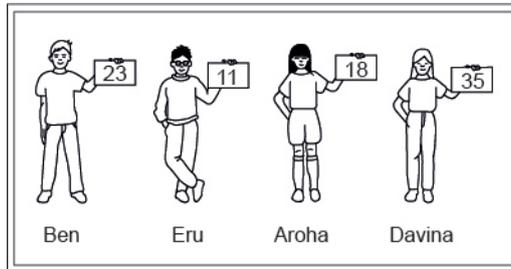
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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## Practice Questions

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?

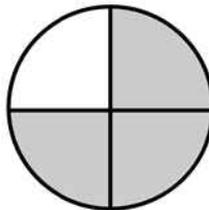


- Ben
- Eru
- Aroha
- Davina

**P02.** Complete this number pattern.

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

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



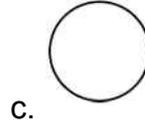
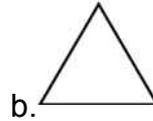
\_\_\_\_\_



**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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ONLY

**01.** Paige was asked to round 325 672 to the thousands place.  
Which number below shows the correct value?

- 325 000
- 325 700
- 326 000
- 326 670

**02.** What number is the boy thinking of?



\_\_\_\_\_

**03.** I am a number.  
When you switch my ten thousand digit with my hundred digit, I become 804 963.  
What number am I?

- 849 063
- 894 063
- 809 463
- 840 963

**04.** The list shows the number of cans each student in Angelo' s class collected for recycling.

Which stem-and-leaf plot below shows this same information?

<b>30</b>	<b>21</b>	<b>12</b>	<b>17</b>	<b>25</b>	<b>18</b>
<b>35</b>	<b>30</b>	<b>26</b>	<b>31</b>	<b>14</b>	<b>29</b>
<b>27</b>	<b>42</b>	<b>35</b>	<b>20</b>	<b>17</b>	<b>34</b>
<b>20</b>	<b>31</b>	<b>21</b>	<b>35</b>	<b>44</b>	<b>17</b>

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

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

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

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

**05.** Write six million, thirty-three thousand, one hundred and three in digits.

\_\_\_\_\_

**06.** Josh rounded the number 36 796 to the nearest ten, to the nearest hundred, to the nearest thousand, and to the nearest ten-thousand.

Which two roundings should have produced the same number?

nearest ten and nearest hundred

nearest hundred and nearest thousand

nearest ten and nearest thousand

nearest hundred and nearest ten-thousand

**07.** 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.

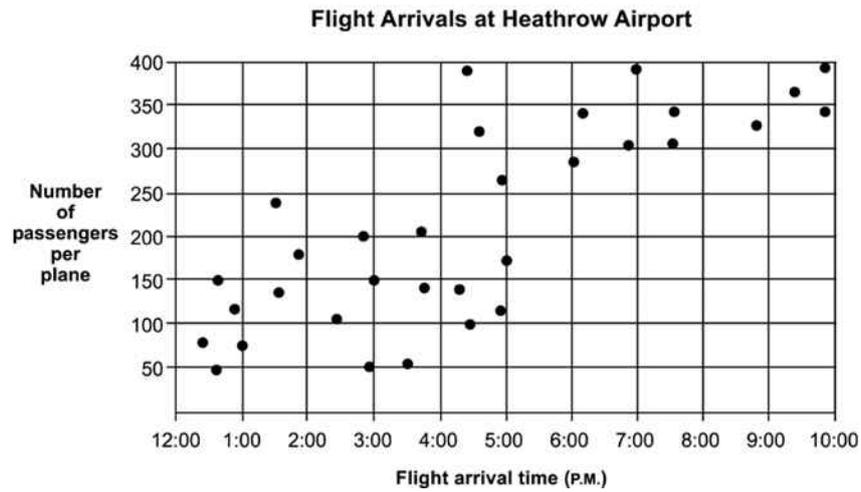
**08.** According to the graph below, how many times did the yearly increase of the price of a hamburger exceed 10 cents?



- None
- One
- Two
- Three
- Four

**Use the following information to answer question 09..**

The number of passengers on each plane landing at an airport is recorded and shown below.



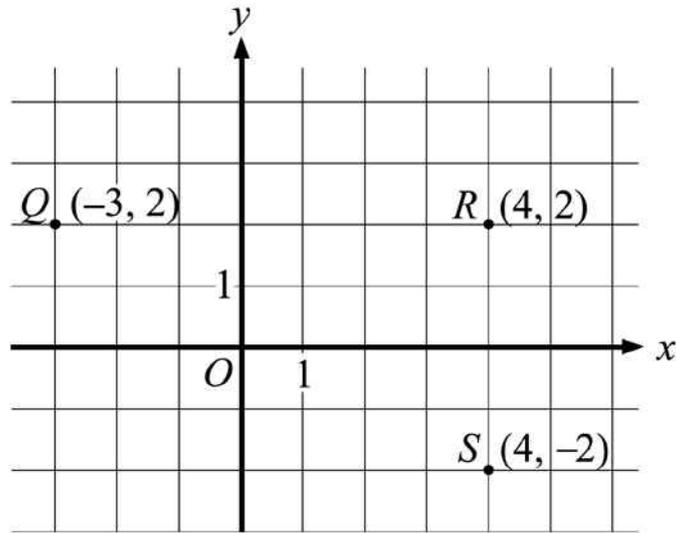
09. The scatter plot shows that

- fewer planes land in the afternoon than in the evening.
- there are more passengers per plane in the evening than in the afternoon.
- more planes land in the evening than in the afternoon.
- there are more passengers per plane in the afternoon than in the evening.

End of Section

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10. If the points  $Q$ ,  $R$ , and  $S$  shown below are three of the vertices of rectangle  $QRST$ , which of the following are the coordinates of  $T$  (not shown)?

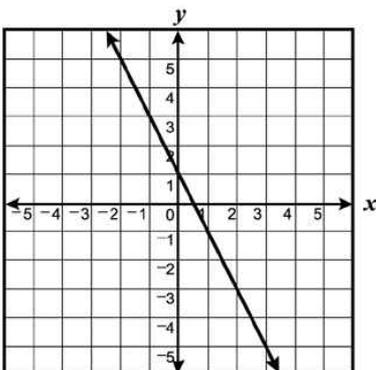
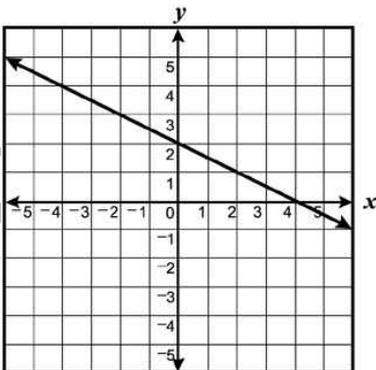
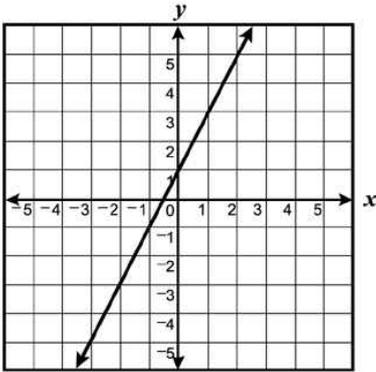
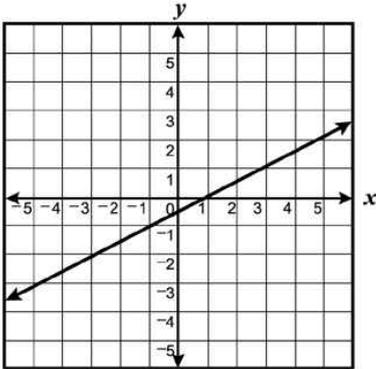


- (4, -3)
- (3, -2)
- (-3, 4)
- (-3, -2)
- (-2, -3)

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11. Which graph shows a line that contains the points in the table of ordered pairs?

$x$	$y$
2	5
0	1
-2	-3



12. What is the value of the expression below?

$$(-1)^5 \times 2 \times 4^2$$

- 64
- 32
- 32
- 64

13. 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,  $17\frac{1}{3}$

14. Hilary has \$9 less than Barbara. Together they have \$21.

If  $x$  represents Barbara's money, which of the following expresses this relationship?

- $(x + 9) + x = 21$
- $(x - 9) + x = 21$
- $x - 9 = 21 + x$
- $x = 21 + x - 9$

15. A package of birdseed costs \$2.58 for 2 kilograms. A package of sunflower seeds costs \$3.72 for 3 kilograms.

What is the difference in the cost *per kilogram*?

- \$0.05
- \$1.14
- \$1.24
- \$1.29

16. Part of the statement below is in bold.

$$7\mathbf{x} + 9 = 45$$

Which **BEST** describes the bold part of the statement?

- Coefficient
- Variable
- Term
- Expression

17. Brad wanted to find three consecutive whole numbers that add up to 81.

He wrote the equation  $(n - 1) + n + (n + 1) = 81$ .

What does the term  $(n + 1)$  stand for?

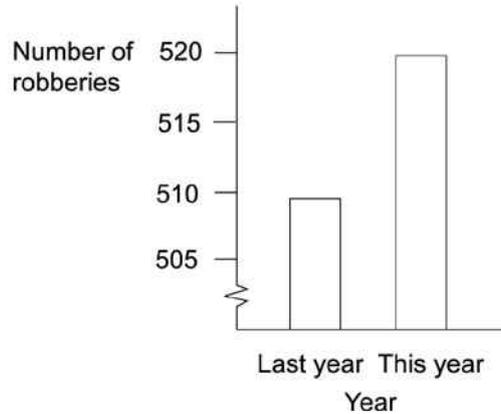
- The least of the three whole numbers.
- The middle whole number.
- The greatest of the three whole numbers.
- The difference between the least and the greatest of the three whole numbers.

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18. 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:

**Total Number of robberies reported per year**



- 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.

**Use the following information to answer questions 19 to 21.**

Complete each question to show equivalence.

(Do **not** fill in the shaded boxes.)

	Decimal	Fraction	Percentage
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19.

0.02

\_\_\_\_\_

■

20.

■

$\frac{5}{8}$

\_\_\_\_\_

21.



36%

End of Section

**22.** The lengths of three sides of a triangle are in the ratio of 3:4:5 and the perimeter of the triangle is 48 centimetres.

The length of the longest side of the triangle is

- 15 centimetres
- 20 centimetres
- 25 centimetres
- 28 centimetres

**Use the following information to answer question 23..**

The table below shows the number of visitors to Bent's Fort from March through September.

Visitors to Bent's Fort

Month	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.
Number of Visitors (rounded to nearest hundred)	1 600	3 200	4 100	4 300	6 100	3 300	2 400

**23.** On the lines below, describe the month-to-month change in the number of visitors from March through September.

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End of Section

**24.** Which one of the following represents 72 written as a product of powers of its prime factors?

- $2^3 \times 3^2$
- $2^1 \times 6^2$
- $2^2 \times 3^3$
- $9 \times 2^3$

**25.** The lowest point of the St Lawrence River is 98 metres below sea level. The top of Mt Jacques Cartier is 426 metres above sea level.

How many metres higher is the top of Mt Jacques Cartier than the lowest point of the St Lawrence River?

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Use the following information to answer questions 26 to 29.

Wendy has a new job as a sales representative at Markson Computers, Inc. She has been asked to choose one of two salary plans. As shown in the chart below, the first plan includes a fixed monthly salary plus a commission for each computer she sells, and the second plan is based strictly on commissions.

Markson Computers Salary Plans

Plan	Fixed Monthly Salary	Commission for Each Computer Sold
I	\$2000	\$10
II	\$0	\$55

26. If Wendy expects to sell 20 computers during her first month, which of the two plans, Plan I or Plan II, would pay her the higher total salary for the first month? Explain how you got your answer.

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27. Wendy is not sure which plan to choose and has consulted Joel, who had the same job as Wendy at Markson last year. Joel gave Wendy his sales results, shown in the chart below, for the first 4 months he worked at Markson.

Joel's Sales Results

Month	Number of Computers Sold
January	22
February	59
March	32
April	63

Find the mean number of computers Joel sold per month during the first 4 months he worked at Markson. Explain how you got your answer.

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28. Using the mean you obtained in the previous question, determine each of the following.

Joel's mean monthly salary for Plan I \_\_\_\_\_

Joel's mean monthly salary for Plan II \_\_\_\_\_

29. Wendy predicts that during the first 4 months she works, the mean number of computers she will sell will be 5 more than the mean number of computers Joel sold during his first 4 months.

Based on her prediction, which salary plan should she choose for the first 4 months? Explain how you got your answer.

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End of Section

30. The Sun is approximately  $1.5 \times 10^8$  kilometres from the Earth. Light travels approximately  $3 \times 10^5$  kilometres per second.

$$\left(\text{time} = \frac{\text{distance}}{\text{speed}}\right)$$

Which of the following is **closest** to the number of seconds it takes light to travel from the Sun to Earth?

- 0.005 second
- 0.050 second
- 500 seconds
- 5000 seconds

31. Which box-and-whisker graph **BEST** represents the stem-and-leaf plot?

Stem	Leaf
5	22588
6	112579
7	3566
8	124

- 
- 
- 
- 

32. Which equation **BEST** fits the data in the table?

$x$	-2	0	2	4
$y$	3	2	1	0

- $y = \frac{-x}{2} + 2$
- $y = x + 3$
- $y = 2x - 3$
- $y = \frac{x}{2} + 2$

33. Ms Thierry and 3 friends ate dinner at a restaurant. The bill was \$67. In addition, they left a \$13 tip.

Approximately what percent of the total bill did they leave as a tip?

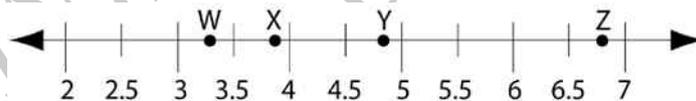
- 10%
- 13%
- 15%
- 20%
- 25%

34. On a recent test, Jeremy wrote the equation  $\frac{x^2-16}{x-4} = x+4$ .

Which of the following statements is correct about the equation he wrote?

- The equation is always true.
- The equation is always true, except when  $x = 4$ .
- The equation is never true.
- The equation is sometimes true when  $x = 4$ .

35. Which point **MOST** closely indicates the location of  $\sqrt[3]{60}$  on the number line below?



- W
- X
- Y
- Z

36. What is the value of the expression below when  $a = 6$  and  $b = 2$  ?

$$4b + ab \div (a - b)$$

- 5
- 9
- 11
- 16

37. According to the 1990 U.S. Census, 27.2% of Massachusetts residents over the age of 25 had graduated from a 4-year college programme.

In a pie graph representing all Massachusetts residents over the age of 25, about how many degrees should be in the sector representing these 4-year college graduates?

- $27^\circ$
- $17^\circ$
- $98^\circ$
- $68^\circ$

38. 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

**39.** There were approximately 113 800 000 people living in Nigeria in 1999.  
How is this number written in scientific notation?

- $113.8 \times 10^6$
- $11.3 \times 10^7$
- $1138.0 \times 10^5$
- $1.138 \times 10^8$

**Use the following information to answer question40..**

A baseball player's batting average is determined by dividing the number of safe hits by the number of turns at bat. Batting averages are expressed as decimals rounded to three places.

For example, a player who made 15 safe hits in 48 turns at bat would have a batting average of .313.

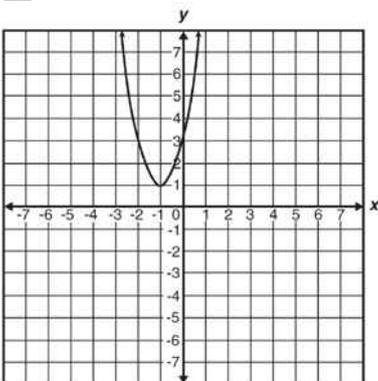
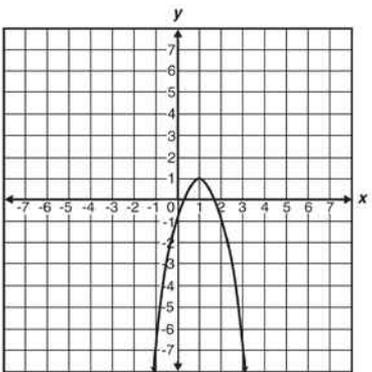
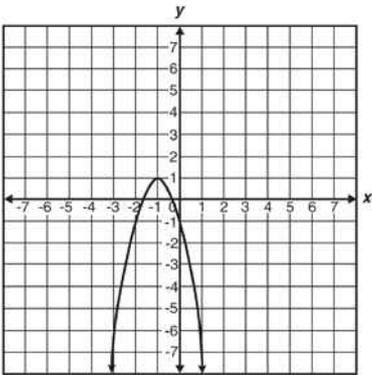
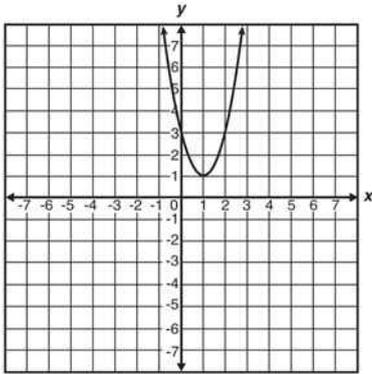
**40.** Assume that the player begins with 15 safe hits in 48 turns at bat.

How many safe hits would the player need in his next 10 turns at bat in order to increase his batting average from .313 to .362?

Number of safe hits \_\_\_\_\_

End of Section

41. Which is the graph of  $y = -2(x - 1)^2 + 1$ ?



ANSWER ONLY ON SCREEN ONLY

**42.** A pharmacist mixed some 10%-saline solution with some 15%-saline solution to obtain 100 mL of a 12%-saline solution.  
How much of the 10%-saline solution did the pharmacist use in the mixture?

- 60 mL
- 45 mL
- 40 mL
- 25 mL

**43.** Use the information below to answer the question.

Chris stopped for petrol twice on a long car trip. The price of petrol at the first station was \$1.45 per litre, and the price at the second station was \$1.55 per litre. On the trip, Chris bought a total of 20 litres and spent \$29.80.

This information can be represented by equations, where  $x$  is the number of litres of petrol Chris bought at the first station and  $y$  is the number of litres of petrol Chris bought at the second station.

Complete the second equation.

$$x + y = 20$$

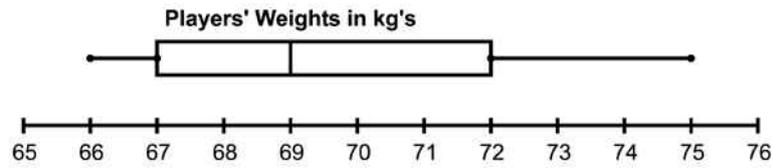
$$\underline{\hspace{2cm}}x + \underline{\hspace{2cm}}y = 29.80$$

**44.** Which of the following could be the next step in solving the equation  $3(x + 2) = 3 - (x + 1)$ ?

- $3x + 6 = 3 - x - 1$
- $3x + 2 = 3 - x - 1$
- $3x + 6 = 3 - x + 1$
- $3x + 5 = 3 - x + 1$

45. The weights of the 20 players on a school soccer team are summarised in the box-and-whisker plot shown below.

Which of the following statements is **TRUE**?



- The mean weight of the team is 69 kg.
- Half the players' weights are between 67 and 72 kg.
- The lightest player in the team is 67 kg.
- The range of weights of players on the team is 5 kg.

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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

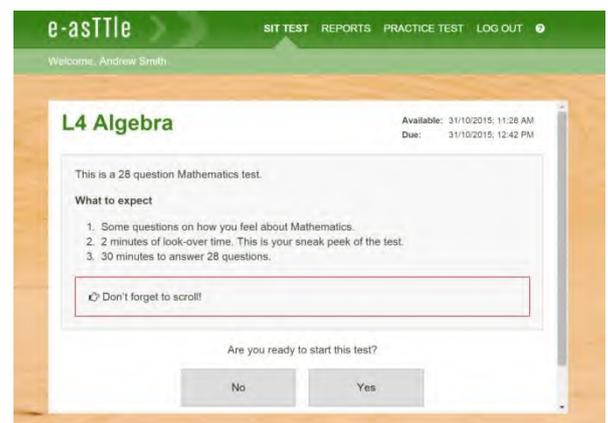
### 1. Check equipment

- 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.