Summary

Test Identification	
Name	2020 SW MY MATH 2.6
Date Created	18 May 2020
Date Modified	22 Jul 2020
Subject	Mathematics
Status	SCORED
Sequence Number	1024705
Total Test Time	57 minutes
Delivery Method	Onscreen

Curriculum Strand			
Number Sense & Operations	15	**Statistics**	13
Algebra	17		

Curriculum Level					
5B	1	**5P**	5	**5A**	2
6B	11	**6P**	19	**6A**	7

Cognitive Processing			
Surface	17	**Deep**	28

Slider Settings			
Strands		**Level**	
Number Sense & Operations	Most	**Level 5**	Few
		Level 6	Most
Algebra	Most		
Statistics	Most		

Marking Guide : 2020 SW MY MATH 2.6

Q.No	Marking Key
1	c
2	c
3	a
4	c
5	d
6	d
7	d
8	14
9	c
10	46 °C
11	b
12	Can a heavier person lift more? OR Do people with big biceps lift more? OR Do heavier people with big biceps lift more? 'Could use words like "compare" or "explore" or "relationship" to indicate a suitable investigation'
13	97
14	b
15	d
16	b
17	e
18	c
19	b
20	c
21	b
22	a
23	1 -- e, 2 -- f, 3 -- d, 4 -- b 'All correct for one mark.'
24	a
25	d
26	b
27	1/2, -3
28	c
29	(1,4)

Q.No	Marking Key
30	Exaggerates gradient, or skips the first 80 shirts and makes an increase of 5 look bigger, or looks like Pat had few/lots sales, or similar suitable explanation
31	$(x + 6)(x + 10) = 100$ or $x^2 + 16x - 40 = 0$ or equivalent
32	30
33	d
34	b
35	b
36	Random sample from each class in the school, or increase the sample size or use systematic sampling or similar suitable sample.
37	a
38	a
39	b
40	a
41	b
42	d
43	c
44	d
45	8.333 or 8.33 or 8.3

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	Unlike Me	Like Me	Very Like Me
	1	2	3	4
01. I think maths is exciting and interesting.	◯	◯	◯	◯
02. I never get tired of doing maths.	◯	◯	◯	◯
03. I like to do and think about maths outside of school.	◯	◯	◯	◯
04. I think maths helps me to understand life.	◯	◯	◯	◯
05. I think that maths helps people make important decisions.	◯	◯	◯	◯
06. Maths is NOT boring.	◯	◯	◯	◯

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?
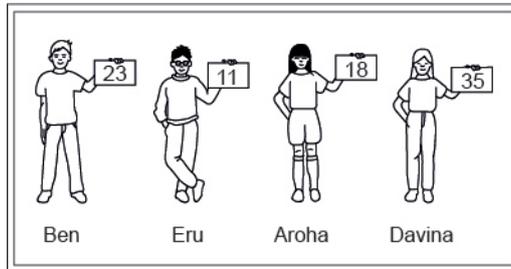
⬭　Ben

⬭　Eru

⬭　Aroha

⬭　Davina

P02. Complete this number pattern.

2, 4, ____, ____, 10

P03. What fraction of this circle is shaded?

☐

____

☐
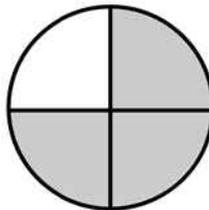
P04. Match the sentence with the correct shape.

1. I have three sides

☐

2. I have 4 sides

☐

a. ☐ (square)

b. △ (triangle)

c. ◯ (circle)
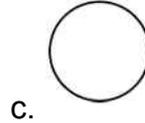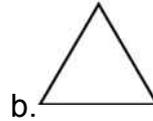
P05. Which numbers make this number sentence **TRUE**?

$$2 + ☆ > 5$$

☐ 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.

	TRUE	FALSE
In the number 213, the value of 1 is ten.	⬭	⬭
In the number 504, the value of 5 is fifty.	⬭	⬭

01. Using the map below, what is the measure of the shortest route from the playground to the cafeteria?
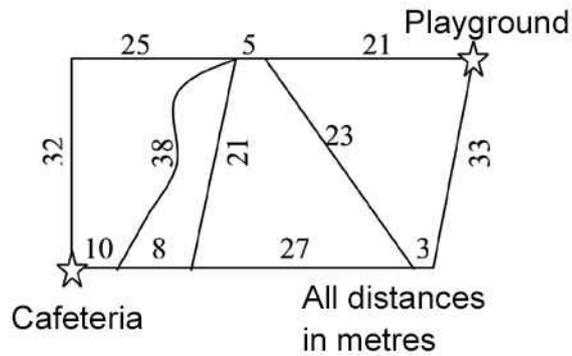
- ⬭ 81 metres
- ⬭ 70 metres
- ⬭ 65 metres
- ⬭ 38 metres

02. The difference between 85 and 53 is 32. Meredith added some number to 85 and then added the same number to 53.
What would be the difference between the two new numbers?

- ⬭ More than 32
- ⬭ Less than 32
- ⬭ 32
- ⬭ It depends on the number added to 85 and 53

03. 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?
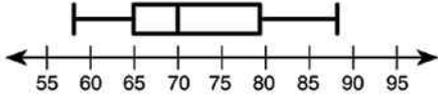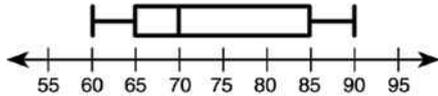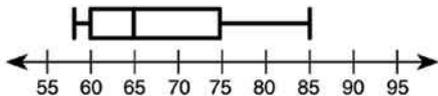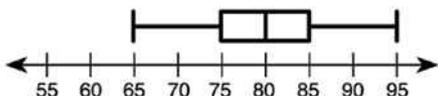
04. The equation of the line that contains the points (-8, 1) and (0, -5) is

- $y = \frac{3}{4}x + 7$
- $y = \frac{1}{2}x + 1$
- $y = \frac{-3}{4}x - 5$
- $y = \frac{-3}{4}x + 7$

05. Four girls on a high school athletics team practised the shot put. Each girl made 10 attempts, and the distances measured after each attempt are shown on the line plots below.

Which girl's range of distances was the greatest?

Candace's Attempts
```
        X  X  X
     XX  XXX  XX
  +--+--+--+--+--+--+--+--+-->
  28   32   36   40   44
      Distance (in feet)
```

Sara's Attempts
```
                XX X
           X  XXXXXX
  +--+--+--+--+--+--+--+--+-->
  28   32   36   40   44
      Distance (in feet)
```

María's Attempts
```
        X
        X  X  X
     XXXXX  X
  +--+--+--+--+--+--+--+--+-->
  28   32   36   40   44
      Distance (in feet)
```

Rosie's Attempts
```
                X  X
        X    X  XXXXXX
  +--+--+--+--+--+--+--+--+-->
  28   32   36   40   44
      Distance (in feet)
```
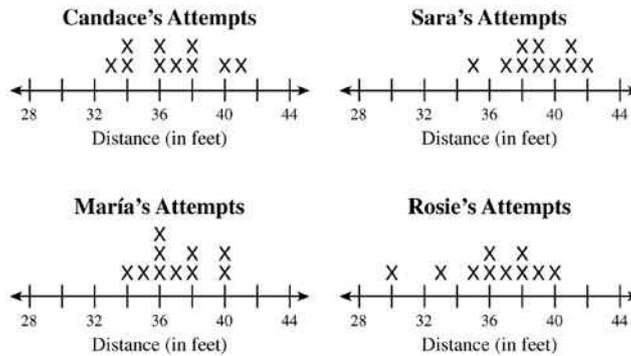
- ◯ Candace
- ◯ Maria
- ◯ Sara
- ◯ Rosie

06. Water is poured into this flask at a constant rate.
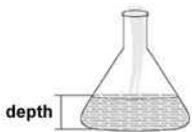
depth

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

- ◯ (graph: depth increasing linearly steeply vs time)
- ◯ (graph: depth decreasing concave curve vs time)
- ◯ (graph: depth increasing concave-down curve vs time)
- ◯ (graph: depth increasing concave-up curve vs time)

07. Which relationship would **MOST** likely result in a scatter plot like the one shown?

- ⬭ The longer you study, the better your grades.
- ⬭ The lower your earning, the less you spend.
- ⬭ The longer you drive, the further you travel.
- ⬭ The less you spend, the more savings you have.

08. Mathew and Robert were playing marbles together. Mathew started with 26 marbles and Robert started with 53 marbles.
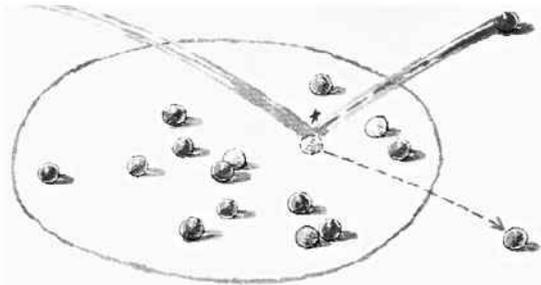
What is the minimum number of marbles that Mathew needs to win from Robert so that he will have more marbles than Robert?

_____

09. $2^4 \times 3^4$ is the same as

○ 5^4

○ 5^8

○ 6^4

○ 6^8

10. The line plot below shows the average daily temperature in a city for each day during the month of April.

Average Daily Temperatures (°C)
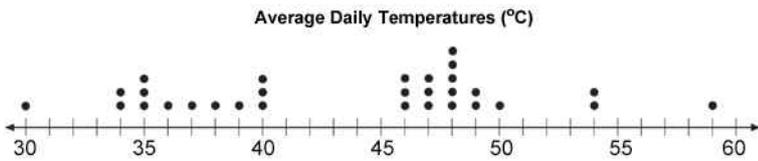
What was the median temperature?

_____

11. Which following point on the number line is closest to $\sqrt{N}$?
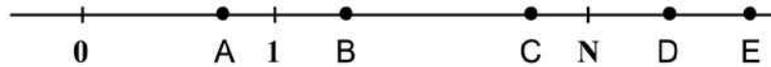
○   A

○   B

○   C

○   D

○   E

Use the following information to answer question12..

A sports scientist is interested in the importance of mass, muscle bulk and strength.

The scientists asked 12 students to conduct a fitness test.

The results were as follows.

Mass of Students (kg)	Circumference of biceps (cm)	Lift test (kg)
52	22	48
57	24	52
62	28	51
59	26	55
62	31	54
64	30	60
73	34	58
76	28	57
84	35	63
78	33	60
80	34	61
82	36	62

12. Write a statistical question that you wish to answer that involves comparing the data of your chosen variables from the information provided.

_____

_____

End of Section

13. The table gives a quadratic relationship.

x	1	2	3	4	5	10
y	-2	1	6	13	22	

What is the missing number?_____

14. What is the slope of the line defined by the equation shown below?
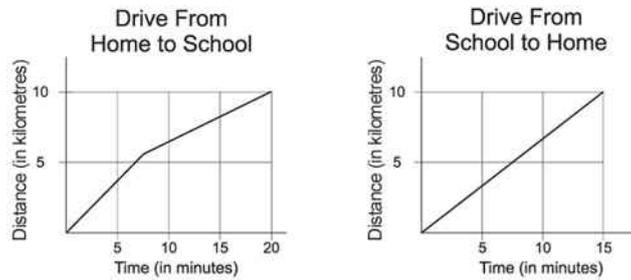$5x + 2y = 10$

- ◯ $-\dfrac{2}{5}$
- ◯ $-\dfrac{5}{2}$
- ◯ $\dfrac{5}{2}$
- ◯ $\dfrac{2}{5}$

15. Calculate $4\frac{3}{4} - 3\frac{1}{2} \times 1\frac{2}{7}$

○ $1\frac{17}{28}$

○ $9\frac{1}{4}$

○ $1\frac{3}{4}$

○ $\frac{1}{4}$

16. The two graphs below show Carol's drive from home to school and from school to home.
What is the difference in her average speed in kilometres per hour for the two trips?

Drive From Home to School — Distance (in kilometres) vs Time (in minutes)

Drive From School to Home — Distance (in kilometres) vs Time (in minutes)

○   5 kph

○   10 kph

○   15 kph

○   20 kph

17. $\dfrac{6 \times 10^3}{3 \times 10^5} =$

○ 0.5×10^2

○ 2×10^2

○ $2 \times 10^{0.6}$

○ 0.5×10^{-2}

○ 2×10^{-2}

18. A study was conducted to determine the effectiveness of varying amounts of vitamin C in reducing the number of common colds.

A survey of 450 people provided the following information.

Which of the following statements would be a valid conclusion from this table?

	Daily amount of Vitamin C taken		
	None	50 mg	100 mg
No colds	57	26	17
At least one cold	223	84	43

◯ The data proves that vitamin C reduces the number of common colds.

◯ The data proves that vitamin C has no effect on the number of common colds.

◯ There appears to be a strong association between the consumption of vitamin C and the occurrence of common colds.

◯ There appears to be little association between the consumption of vitamin C and the occurrence of common colds.

◯ Since common colds are caused by viruses, there is no reason to conclude that vitamin C could have any effect.

19. Which of the following represents the graph of the equation below?

$y = -x^2 + 2$

○

○

○

○
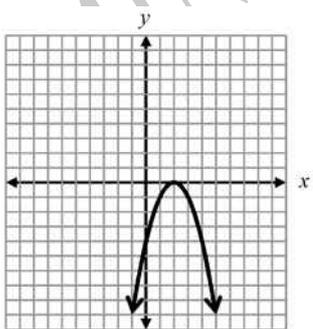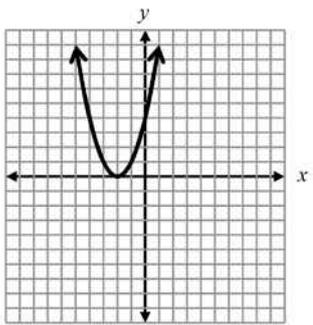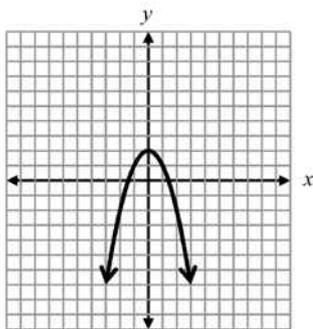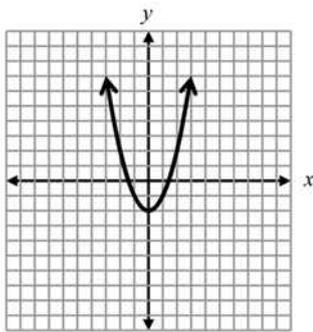
20. The mass of an electron is 9×10^{-28} grams. A proton weighs 1836 times as much as an electron.

Which of the following represents the weight, in grams, of a proton written in scientific notation?

○ 1.0836×10^{-24}

○ 1.0836×10^{-28}

○ 1.6524×10^{-24}

○ 1.6524×10^{-28}

21. There are two numbers with the following properties.
1) The second number is 3 more than the first number.
2) The product of the two numbers is 9 more than their sum.
Which of the following represents possible values of these two numbers?

○   -6, -3

○   -4, -1

○   -1, 4

○   -3, 6

22. A laboratory has a 75 gram sample of radioactive material. The half-life of the material is 10 days. (This means that it takes 10 days for half of the initial mass to decay).
The formula below can be used to find *m*, the remaining mass in grams, in terms of *t*, the number of **10-day intervals** that mass has been decaying.

$m = 75(0.5)^t$

Based on the formula, what is the mass of the laboratory's sample remaining after 30 days?

○   9.375 grams

○   11.25 grams

○   12.5 grams

○   22.5 grams

23. Match up each line of her working, with a description.

Moana wants to concrete her drive, which is about 12 metres long, 3 metres wide and 100 mm thick. Concrete costs $160 per cubic metre. The following are *some* of her calculations.

☐	1. 12 × 3	a. Thickness of concrete
☐	2. 12 × 3 × 0.1	b. Rounded cost
☐	3. 3.6 × 160	c. Cost per square metre
☐	4. 580	d. Cost of concrete
		e. Surface area of drive
		f. Volume of concrete required

24. Rounded to the nearest 10 kg the mass of a dolphin was reported as 170 kg. Select the weight range that includes all possible weights for the dolphin.

◯ $165\text{kg} \le d < 175\text{kg}$

◯ $165\text{kg} \le d < 174\text{kg}$

◯ $165\text{kg} < d < 174\text{ kg}$

◯ $165\text{kg} < d < 175\text{kg}$

25. A set contains the numbers

$\frac{8}{2},\ -2.3,\ 0,\ \frac{2}{7},\ \sqrt{9},\ 0.\dot{3}\dot{1},\ \sqrt{15},\ -12,\ 2\pi$

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

○   The set contains 8 irrational numbers

○   The set contains 7 irrational numbers

○   The set contains 3 irrational numbers

○   The set contains 2 irrational numbers

26. Which of the following numbers is an irrational number?

○ $\frac{22}{7}$

○ π

○ $\sqrt{9}$

○ 3.1416

27. Solve the following equation for x.

$2x^2 + 5x - 3 = 0$

_____

28. What is the factored form of
$3a^2 - 24ab + 48b^2$?

○ $(3a - 8b)(a - 6b)$

○ $(3a - 16b)(a - 3b)$

○ $3(a - 4b)(a - 4b)$
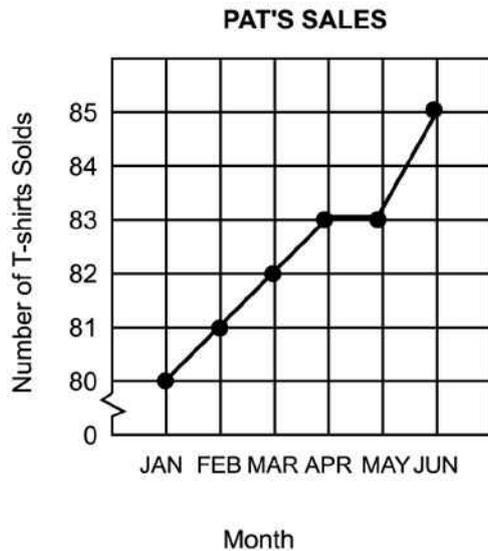
○ $3(a - 8b)(a - 8b)$

29. The ordered pairs below should lie on a straight line, but one has been typed incorrectly.

(-2 , -5) (-1 , -2) (0 , 1) (1, 2) (2 , 7)

Write down the correct co-ordinates for this point, so all of the points do form a straight line.

(_____ , _____)

30. Pat was planning to ask her boss for a raise. She made the graph below to show her boss the increase in her T-shirt sales.

Why does the break in the vertical axis make the graph misleading?

_____

Use the following information to answer question31..

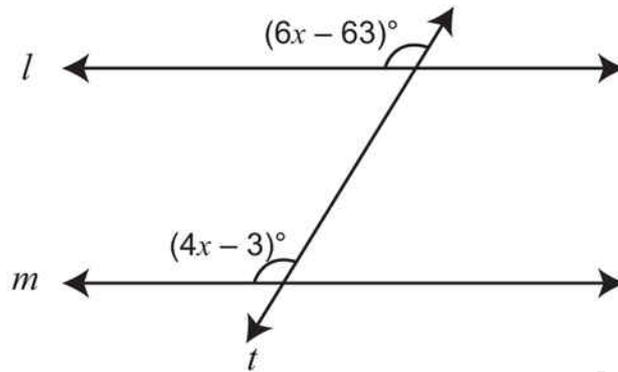Pita wanted to make his garden bigger so he measured his garden and drew a plan.
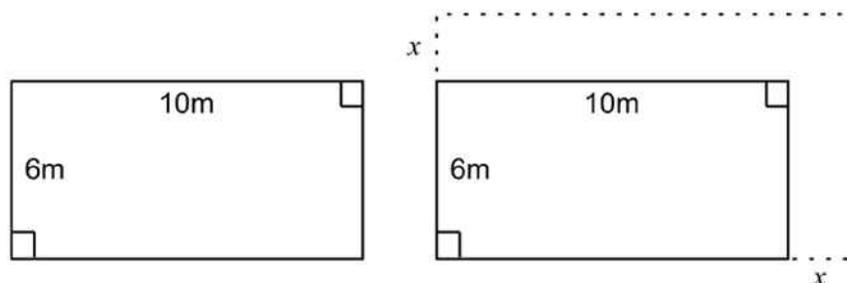
He decided to add the same amount to both the length and the width. The garden now had an area of 100m^2.

31. Write an equation to show how he could find x.

_____

32. Line l is parallel to line m.
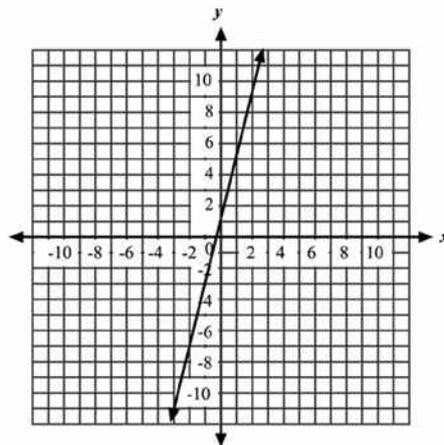

Calculate the value of x.

_____

33. The graph of $y = 4x + 1$ is shown.
How would the graph change if the 4 in the equation were replaced with a 2?

◯ The line would be parallel with a shift up of 2 units.

◯ The line would be parallel with a shift down of 2 units.

◯ The line would have a greater slope, but it would pass through the y-axis at the same point.

◯ The line would have a lesser slope, but it would pass through the y-axis at the same point.

34. 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**?

Players' Weights in kg's
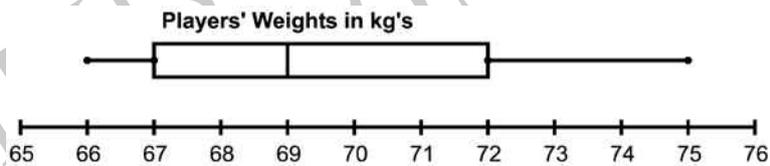
◯ The mean weight of the team is 69 kg.

◯ 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.

35. The graph shows the marks gained by each student in a class on a test.

Marks on test
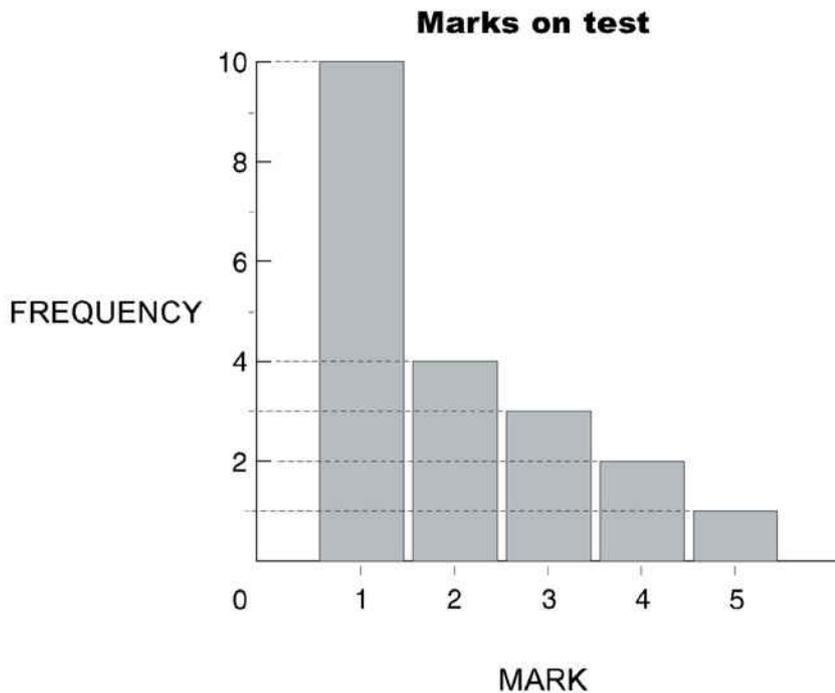
What is the mean mark?

- ⬭   1
- ⬭   2
- ⬭   3
- ⬭   4

Use the following information to answer question36..

A class of 25 students is asked to find out how much time the average student spends on homework during a one-week period. Each student asked one of his/her friends for the information, making sure that no one student was asked more than once. The numbers of hours spent on homework per week are as follows:

8, 0, 25, 9, 4, 19, 25, 9, 9, 8, 0, 8, 25, 9, 8, 7, 8, 3, 7, 8, 5, 3, 25, 8, 10

36. Describe a sampling procedure that would have led to more representative data.

_____

_____

End of Section

37. Which of the following real numbers is **NOT** a rational number?

○ $\sqrt{21}$

○ $3\frac{5}{8}$

○ 2.41414

○ -13

38. Which equation is equivalent to
$5x - 2(7x + 1) = 14x$?

○ $-9x -2 = 14x$

○ $-9x + 1 = 14x$

○ $-9x + 2 = 14x$

○ $12x -1 = 14x$

39. $(2 + m) - (7 - 4m)$ is equal to

○ $-5 - 3m$

○ $-5 + 5m$

○ $9 - 3m$

○ $9 + 5m$

40. The students at Albermarle High held a car wash each week for 10 weeks to earn money for the student council. The students made the scatter plot below to represent the amount of money they earned each week.

Which of the following equations **BEST** represents the line of best fit for these data?

- ⬭ $y = 110$
- ⬭ $y = 110x$
- ⬭ $y = x + 55$
- ⬭ $y = -x + 55$

41. Monica wants to earn an 'A' in mathematics.
- An 'A' requires an average greater than or equal to 92%
- The final project is 20% of the grade.
If Monica has an average of 95%, what is the lowest possible score she can earn on the final project and still earn an 'A'?

- ⬭ 75%
- ⬭ 80%
- ⬭ 86%
- ⬭ 92%

42. Which fraction equals the product $\left(\frac{x+5}{3x+2}\right)\left(\frac{2x-3}{x-5}\right)$?

- ⬭ $\frac{2x-3}{3x+2}$
- ⬭ $\frac{3x+2}{4x-3}$
- ⬭ $\frac{x^2-25}{6x^2-5x-6}$
- ⬭ $\frac{2x^2+7x-15}{3x^2-13x-10}$

43. The mean exam score for 31 students in a geometry class was 79. The median exam score for the same set of students was 75.
Two additional students took the exam at a later time and scored 65 and 93.
How did the mean and median change when these two additional scores were included?

- ◯ The median increased and the mean stayed the same.

- ◯ The median stayed the same and the mean increased.

- ◯ The median and the mean both stayed the same.

- ◯ The median and the mean increased.

44. A right circular cone has radius 5 centimetres and height 8 centimetres.
What is the lateral area of the cone?
(Lateral area of cone = $\pi r l$, where l = slant height.)

- ◯ 40π sq cm
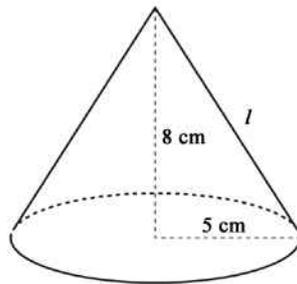
- ◯ 445π sq cm

- ◯ $5\pi\sqrt{39}$ sq cm

- ◯ $5\pi\sqrt{89}$ sq cm

45. Gordon had a mass of 84kg. After one month of not eating fast food he lost 7kg.

What percentage of his mass did Gordon lose?

_____

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	Large Tablets (9"+)
• 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	• 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.
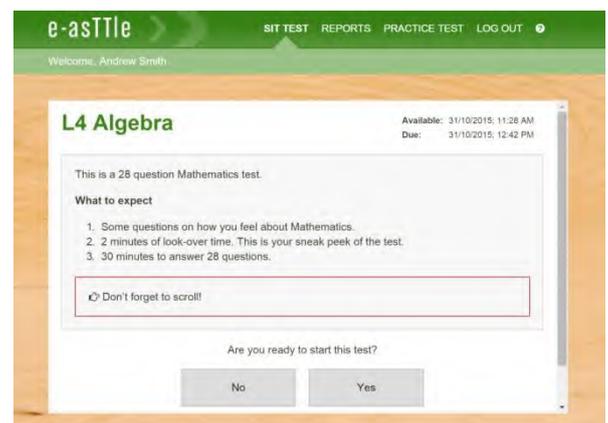
Other reminders to discuss with students:

- 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.

3 answers still saving...You can keep going.	
34:50 test time left	Question 4 of 30

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.

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.