Summary

Test Identification	
Name	2019 MAT SW 1.5(P) N
Date Created	15 Mar 2019
Date Modified	15 Mar 2019
Subject	Mathematics
Status	ACCEPTED
Sequence Number	909351
Total Test Time	50 minutes
Delivery Method	Paper

Curriculum Strand			
Number Sense & Operations	16	**Statistics**	15
Algebra	8		

Curriculum Level					
4B	1	**4P**	6	**4A**	1
5B	6	**5P**	21	**5A**	15

Cognitive Processing			
Surface	12	**Deep**	38

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

Marking Guide : 2019 MAT SW 1.5(P) N

Q.No	Marking Key
1	a
2	b
3	d
4	c
5	c
6	c
7	c
8	a
9	b
10	d
11	$10 458.83 or appropriate rounding up 'Accept $10 430.17 (between 10400 &10600) Do not accept rounded to nearest dollar.'
12	d
13	b
14	c
15	c
16	b
17	b
18	Maths
19	b
20	c
21	b
22	c
23	d
24	0.003784
25	b
26	c
27	false, true, true, false 'All correct for 1 mark (not possible, possible, possible, not possible)'
28	c
29	c
30	b
31	b

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
32	b
33	a
34	a
35	d
36	b
37	c
38	18
39	23
40	22
41	d
42	d
43	b
44	c
45	d
46	d
47	a
48	d
49	a
50	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 (-).

e-asTTle Mathematics
Administration Guidelines and Instructions:
Paper Tests

Use of e-asTTle materials is based on an understanding of good assessment practices, principles, and philosophy. This document will guide you in making the best use of the e-asTTle assessment tools.

1. Valid assessment depends on your ensuring there is a good fit between what you teach and what you assess. That means you choose curriculum content and difficulty appropriate to the teaching programme you are going to implement, or have implemented with your students. e-asTTle allows you to specify curriculum content and difficulty. If the assessment generated by e-asTTle does not meet your expectations, you can revise the e-asTTle assessment. It is important to note that the creation of an e-asTTle assessment can be undertaken at any time (i.e., before the unit is taught, during, or at the end). It is important for the meaningfulness of the results that you do not 'teach' the specific items to the students.

2. Once you have prepared an assessment from e-asTTle, familiarise yourself with the assessment, the marking guide, and the procedures for administering the test. The more familiar you are, the easier it will be to interpret the information in a valid manner. Meaningful interpretations can only be made if e-asTTle instructions are followed appropriately.

3. It is important that students are aware of what is happening to them. They should know (a) what kind of assessment will be used (including question types, length, and timing), and (b) why they are doing the assessment. A **practice** set of tasks is always provided that will assist in this familiarisation.

4. The e-asTTle tasks should be appropriate for all students who are to be, or have been taught the regular classroom programme at the Curriculum Level for which the assessment is designed. Some students (e.g., students with identified learning needs) may be entitled to accommodations (e.g., more time, a reader-writer) in completing the assessment. Please make the appropriate provisions for such students both in the administration and in your interpretations of the results.

5. It is important that the assessment is administered, scored, and data entered according to the standardised procedures in this document. Only then can you make valid interpretations of the performance of your students.

6. Once assessment scores are entered into e-asTTle, you will be aided in the interpretation of the meaning of the scores. You can analyse the scores of individuals and/or the whole class or group you assessed in a variety of ways. Performance can be interpreted by describing the nature of student achievement in terms of curriculum functions, processes, levels, or cognitive functioning. Student performance can be understood by comparison to the achievement of others, and through the progress report, by comparison with the students own previous performance. It is not possible, however, to construct any type of league tables from e-asTTle.

7. You can obtain a description of the curriculum content that students have yet to achieve, have unexpected strengths or weaknesses in, and those they have achieved. Further, the curriculum level of student performance can be identified by major curriculum content areas in your assessment. Progress trends are possible if you administer e-asTTle assessments over a period of time to the same students. By comparing your students with the New Zealand norm population performance, it is possible to identify those whose strengths or weaknesses are extreme (i.e., much higher or lower than the average child). It is also possible to compare your students performance to that of sub-populations defined by student or school characteristics. e-asTTle will help you choose outputs that you will

find helpful in the teaching and learning process, and will guide you to further resources in the curricula areas that you have chosen to assess.

8. Remember that e-asTTle assessments provide a one-off snapshot of student achievement. Once you have interpreted the meaning of the e-asTTle scores, you should triangulate with other information you have already obtained from other assessments such as observation, class work, or other diagnostic tools. You need to exercise your professional judgement in determining whether the e-asTTle interpretation supports or challenges what you already know about an individual student or group of students. This may mean you have to collect some more data to determine if interpretations are valid or appropriate. For example, you will want to know if a gap was because of lack of knowledge or ability, to poor physical or emotional health on the day, or to insufficient teaching of the curricula areas.

9. Once you have interpreted and evaluated the information provided by e-asTTle, you may want to put it to use in your instructional programme. You may wish to (a) change the content of what you teach, (b) alter your teaching methods, or (c) refer to the web sites indicated via the e-asTTle What next for further teaching aids.

10. You may want to record and report the e-asTTle results, the interpretation you made, and your instructional response so that you can better communicate with your fellow teachers and mentors, the parents of your students, your colleagues, and your students. e-asTTle records the results and provides a range of useful reports that you may want to print off to enable such communication. This information can also be exported to school management systems.

11. Should you require further guidance in understanding or using these recommendations, assistance can be found under the HELP section of e-asTTle, on the e-asTTle website (on the internet at http://e-asTTle.tki.org.nz), from your local Assessment to Learn (AtoL) professional development provider, or from the Ministry of Education Sector Service Desk (Tel: 0800 225 5428, then select Option 2 for e-asTTle).

Special Instructions:

e-asTTle Mathematics tests are designed to take between 12 and 60 minutes. This does not include the time taken for filling in the demographic page, the cover, or the practice questions. For longer tests (say, 40 minutes or more), it may be advisable to break the time allowed into two separate sessions. If this is done, do not allow students to review questions answered in the first session. A blank page inserted into the script about half way through will act as a marker for this purpose. As this is a deviation from the normal procedure, teachers should take this into account when interpreting the results.

Equipment: Ensure students have access to rulers, pencils, erasers, compasses, and protractors. e-asTTle Mathematics tests for Levels 2 to 4 DO NOT require calculators. Tests that include Levels 5 and 6 DO require the use of calculators.

Answer Images: A number of questions require complex answers that cannot be easily described. A set of drawn answer images will be inserted in the Marking Guide where appropriate.

Image Accuracy

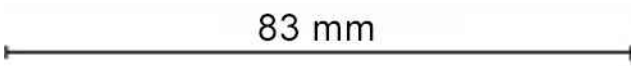
The e-asTTle materials have been designed to be of a fixed size for both onscreen and paper delivery. Sometimes, the browser you use, the printer and Acrobat settings can change the size of images. There are a number of items that require students to measure accurately. Use the calibration guide below (Figure 1) to be sure that e-asTTle images are being printed at the correct size.

If your printer does not render the images on the test calibration page at the required sizes then you should seek assistance with your printing before administering an e-asTTle test. If this does not produce the image correctly sized, you will have to measure the image as printed yourself, and use the Marking Guide as an indication of the degree

of accuracy expected, and mark the students accordingly.

Acrobat Reader Print Settings: You must switch off any settings in the print dialog box that may expand or shrink the artwork when you print your test. When printed check measurements against the image below.

Figure 1



Mathematics

First Name

Last Name

School Name

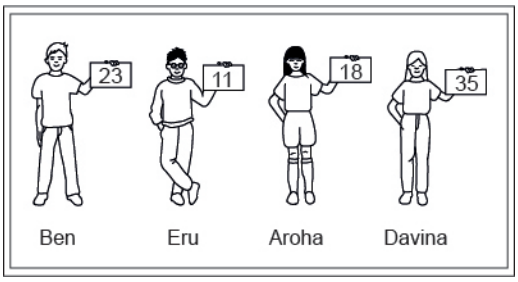
Room Number / Class

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
01. It is very important to me to be good at maths.	⬭	⬭	⬭	⬭
02. I try to get more maths answers right than my friends.	⬭	⬭	⬭	⬭
03. I like hard, challenging maths.	⬭	⬭	⬭	⬭
04. I do as much school work as possible in maths.	⬭	⬭	⬭	⬭
05. I like to help my friends with their maths school work.	⬭	⬭	⬭	⬭
06. I like it when the maths examples are hard.	⬭	⬭	⬭	⬭

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

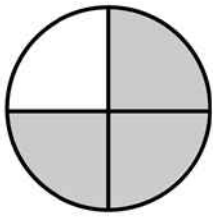
⬭ Aroha

⬭ Davina

P02. Complete this number pattern.

2, 4, ____, ____, 10

P03. What fraction of this circle is shaded?



☐

———

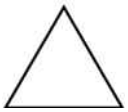
☐

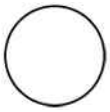
P04. Match the sentence with the correct shape.

☐ 1. I have three sides

☐ 2. I have 4 sides

a. 

b. 

c. 

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

☐ 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. How much change will John get back from $5.00 if he buys 2 notebooks that cost $1.80 each?

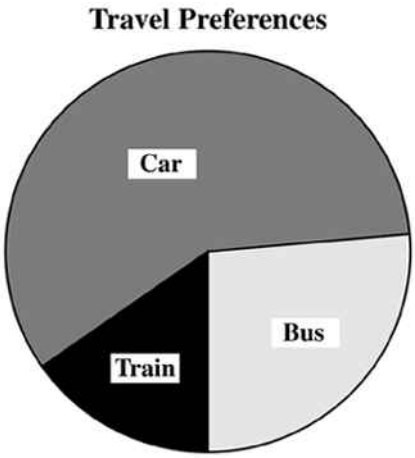
⬭ $1.40

⬭ $2.40

⬭ $3.20

⬭ $3.60

02. In an opinion poll, 1800 people were asked about their preferred mode of travel from Boston to New York. The circle graph below shows the results of the poll.
Which of the following is closest to the number of people polled who preferred to travel by bus?



⬭ 375

⬭ 475

⬭ 625

⬭ 725

03. Which of the following is **NOT** a perfect square?

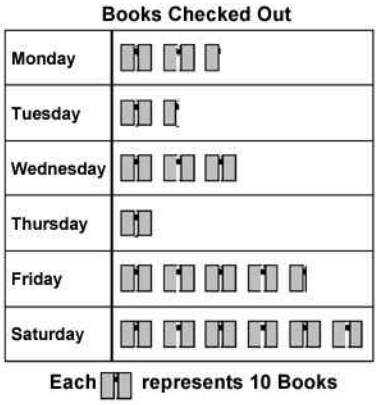
⬭ 49

⬭ 64

⬭ 81

⬭ 99

04. The graph shows the number of books checked out at the public library each day last week.
On which day were there 3 times as many books checked out as on Tuesday?



- ⬭ Wednesday
- ⬭ Thursday
- ⬭ Friday
- ⬭ Saturday

05. Which of the following is both a multiple of 3 and a multiple of 7?

- ⬭ 7007
- ⬭ 8192
- ⬭ 21 567
- ⬭ 22 287
- ⬭ 44 040

06. In which list of fractions are all of the fractions equivalent?

- ⬭ $\frac{3}{4}, \frac{6}{8}, \frac{12}{14}$
- ⬭ $\frac{3}{5}, \frac{5}{7}, \frac{9}{15}$
- ⬭ $\frac{3}{8}, \frac{6}{16}, \frac{12}{32}$
- ⬭ $\frac{5}{10}, \frac{10}{15}, \frac{1}{2}$

07. Chad has a mean time for running the under 200-metre dash of 36.2 seconds. Which of the following statements **MUST** be **TRUE**?

- ⬭ Chad runs the 200-metre dash in 0 to 36.2 seconds.
- ⬭ Chad's best time in the 200-metre dash is 36.2 seconds.
- ⬭ Chad runs the 200-metre dash, on average, in 36.2 seconds.
- ⬭ Chad runs the 200-metre dash faster than 36.2 seconds most of the time.

08. A sweater originally cost $37.50. Last week, Moesha bought it at 20% off. How much was deducted from the original price?

- ⬭ $7.50
- ⬭ $17.50
- ⬭ $20.00
- ⬭ $30.00

09. $8\frac{4}{5} - \frac{1}{2} =$

- ⬭ $8\frac{3}{5}$
- ⬭ $8\frac{3}{10}$
- ⬭ $7\frac{3}{10}$
- ⬭ $7\frac{2}{3}$

10. A journalist is interested in estimating the percentage of Massachusetts residents who support the use of state tax dollars to pay for a new civic centre in Springfield.
Which of the following would result in the **MOST** reliable estimate?

- ⬭ Survey 100 randomly selected civic centre board members.
- ⬭ Survey 100 randomly selected Boston residents.
- ⬭ Survey 100 randomly selected Springfield residents.
- ⬭ Survey 100 randomly selected Massachusetts residents.

11. The Zandalia Zoo uses 214,964 kilograms of meat per year.

If the meat costs $2.53 per kilogram, how much does the meat cost per ***week***?

_____

12. If $\frac{2}{25} = \frac{n}{500}$, then n =

- ⬭ 10
- ⬭ 20
- ⬭ 30
- ⬭ 40
- ⬭ 50

13. Lucy surveyed all year levels at her school to find out who received a CD for Christmas.
The results are below.
Lucy found the highest percentage of students who received a CD for Christmas was in

Year	Students who received a CD
7	31 out of 50
8	17 out of 25
9	65 out of 100
10	12 out of 20

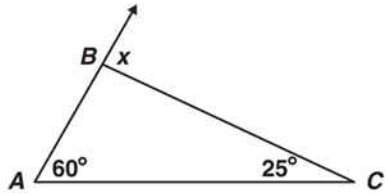
⬭ Year 7.

⬭ Year 8.

⬭ Year 9.

⬭ Year 10.

14. What is $m\angle x$?



⬭ 35º

⬭ 60º

⬭ 85º

⬭ 95º

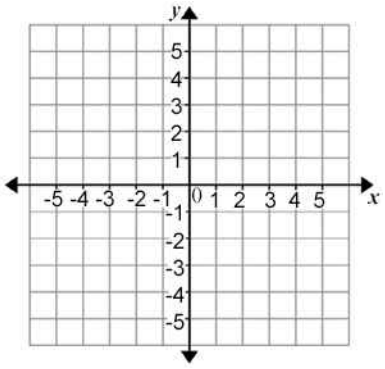
15. Harold was looking at a scale drawing of a city park. A reflection pool 27 metres long measured 1.8 centimetres on the drawing.
Which is **MOST** likely the scale used to make the drawing?

- 1 cm represents 9 m
- 1 cm represents 12 m
- 1 cm represents 15 m
- 1 cm represents 18 m

16. 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

17. As a result of a transformation, the image of the point (-1, 3) is (-3, 1).
This is an example of a reflection across the



- line $y = x$
- line $y = -x$
- x-axis
- y-axis

Use the following information to answer question18..

The table shows a comparison of marks of Maths and English in 10Mt's end of year exams.

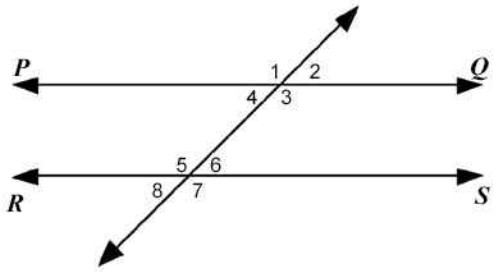
	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
Maths	12	36	46	58	76
English	24	32	48	61	82

18. Which subject has the marks with the greatest range?

_____

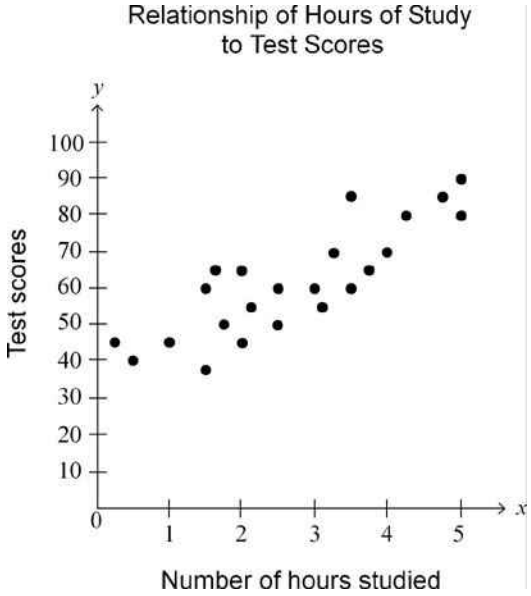
End of Section

19. In this figure, *PQ* and *RS* are parallel.
Of the following, which pair of angles has the sum of 180º?



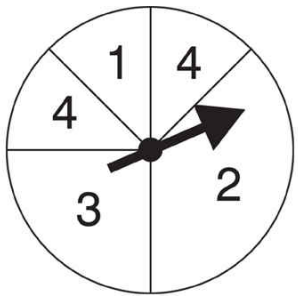
- ⬭ ∠5 and ∠7
- ⬭ ∠3 and ∠6
- ⬭ ∠1 and ∠5
- ⬭ ∠1 and ∠7
- ⬭ ∠2 and ∠8

20. Which of the following equations approximates the line of best fit?



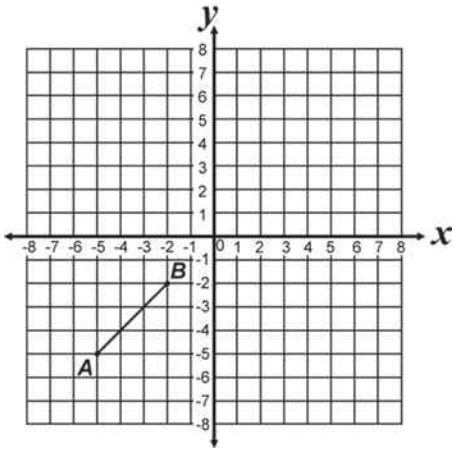
- ⬭ $y = -10x + 30$
- ⬭ $y = -10x + 60$
- ⬭ $y = 10x + 30$
- ⬭ $y = 10x + 60$

21. What is the probability of spinning an odd number on this spinner?



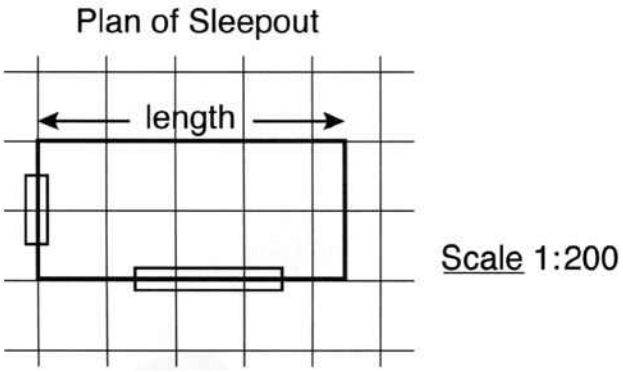
- ⬭ $\frac{1}{2}$
- ⬭ $\frac{3}{8}$
- ⬭ $\frac{1}{4}$
- ⬭ $\frac{2}{5}$

22. The line segment AB is translated 6 units to the right.
What are the coordinates of the image of point *B*?



- ⬭ (-4, -2)
- ⬭ (-4, 2)
- ⬭ (4, -2)
- ⬭ (4, 2)

23. Tane is building a sleepout for his family. His plan has a scale of 1:200.
From his plan, what is the length of the sleepout?



- ⬭ 4.5 cm
- ⬭ 9 cm
- ⬭ 4.5 m
- ⬭ 9 m

24. Write 3.784×10^{-3} as an ordinary number.

_____

25. 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

26. Look at the pattern below.
1, 3, 7, 15, 31, 63
The 14th term in this pattern is 16 383.
What is the 15th term?

⬭ 16 385

⬭ 16 415

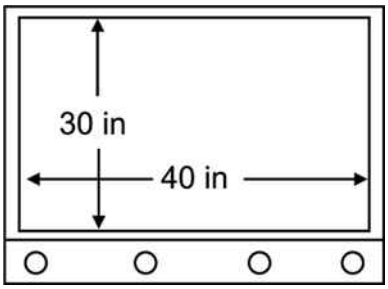
⬭ 32 767

⬭ 32 781

27. Akira read from a book on Monday, Tuesday, and Wednesday. He read an average of 10 pages per day.
Indicate whether each of the following is **possible** or **not possible**.

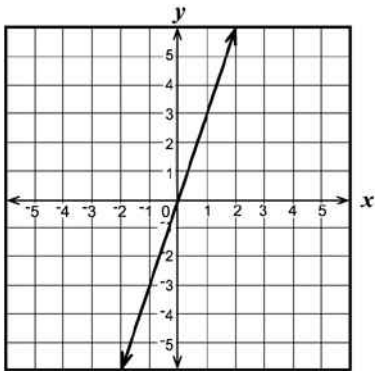
Pages Read				
Monday	**Tuesday**	**Wednesday**	**Possible**	**Not possible**
4 pages	4 pages	2 pages	⬭	⬭
9 pages	10 pages	11 pages	⬭	⬭
5 pages	10 pages	15 pages	⬭	⬭
10 pages	15 pages	20 pages	⬭	⬭

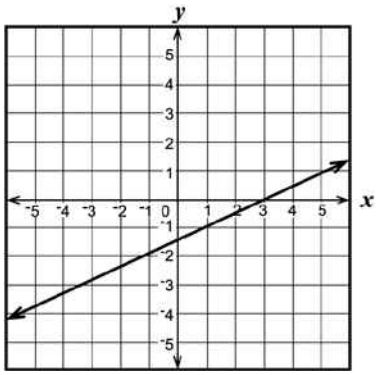
28. What is the diagonal measurement of the TV screen shown in the figure below?

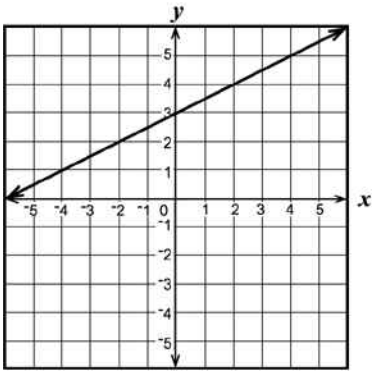


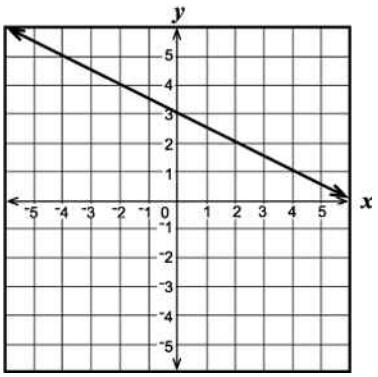
- 25 inches
- 35 inches
- 50 inches
- 70 inches
- 1200 inches

29. Which line **MOST** likely has a slope of $\frac{1}{2}$ and a y-intercept of 3?









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

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

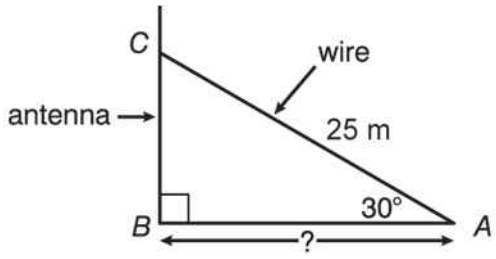
31. How many integers are there between $\sqrt{15}$ and $\sqrt{63}$?

- ⬭ Three
- ⬭ Four
- ⬭ Five
- ⬭ Six
- ⬭ Seven

32. What is the value of $\frac{\sqrt{3.2}}{2}$ to the nearest tenth?

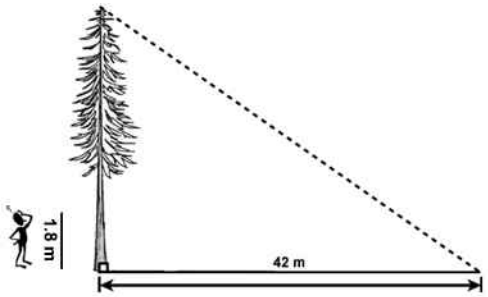
- ⬭ 0.7
- ⬭ 0.9
- ⬭ 1.3
- ⬭ 1.5

33. A 25 metre wire attached to an antenna makes a 30º angle with the level ground, as shown below.
What is the approximate distance from the base of the antenna to the place where the wire is staked to the ground?



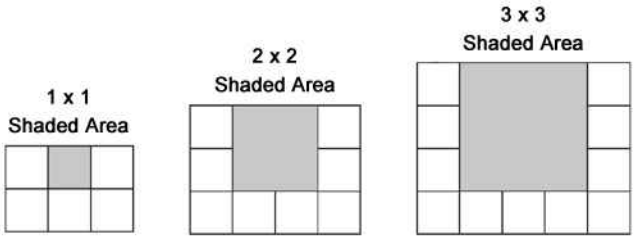
- ⬭ 22 m
- ⬭ 18 m
- ⬭ 13 m
- ⬭ 28 m

34. A 1.8m tall forest ranger used shadows to approximate the height of a large tree. At a time when the shadow of the tree was 42m long, the ranger's shadow was 3m long.
What is the approximate height of the tree?



- ⬭ 25 m
- ⬭ 30 m
- ⬭ 32 m
- ⬭ 34 m

35. Each figure below shows the number of concrete blocks needed to border 3 sides of a shaded area.
If the pattern continues, which of the following expressions represents the number of concrete blocks needed to border 3 sides of an $n \times n$ shaded area?



- ⬭ $5n$
- ⬭ n^3
- ⬭ $3n$
- ⬭ $3n + 2$

36. A farmer harvested 14 000 kilograms of almonds from an 8-hectare orchard.
Which proportion could be solved to find x, the expected harvest from a 30-hectare orchard?

- ⬭ $\frac{8}{14\,000} = \frac{x}{30}$
- ⬭ $\frac{8}{14\,000} = \frac{30}{x}$
- ⬭ $\frac{30}{14\,000} = \frac{x}{8}$
- ⬭ $\frac{30}{14\,000} = \frac{8}{x}$

37. The table shows the winning distance (in metres) for the Olympic shot put event since 1896.
Which statement **BEST** summarises the data?

Year	Distance (m)	Year	Distance (m)
1896	11.22	1956	18.57
1900	14.10	1960	19.68
1904	14.81	1964	20.33
1906	12.33	1968	20.54
1908	14.21	1972	21.18
1912	15.34	1976	21.05
1920	14.81	1980	21.35
1924	14.99	1984	21.26
1928	15.87	1988	22.47
1932	16.00	1991	21.70
1936	16.20	1996	21.62
1948	17.12	2000	21.29
1952	17.41	2004	21.16

⬭ The winning distances increase by more than 21 m over the years since 1896.

⬭ The winning distance was always greater than the winning distance at the previous Olympics.

⬭ Winners at the last four Olympics throw almost twice as far as the first winner in 1896.

⬭ The winning distance has consistently increased over time.

Use the following information to answer questions 38 to 40.

Suzanne was checking the weather conditions in the Australia Pacific region and found this chart in the newspaper.

Temperature (°C)

Australia Pacific		Low	High
Adelaide	fine	5°	13°
Apia.....	cloudy	23°	31°
Brisbane.....	cloudy	6°	20°
Darwin	fine	20°	30°
Honolulu.....	fine	23°	32°
Melbourne	showers	6°	14°
Perth	drizzle	9°	20°
Rarotonga.....	showers	21°	24°
Suva	cloudy	18°	29°
Sydney.....	fine	9°	17°

38. What is the range of the low temperatures?

_____ ºC

39. What is the mean of the high temperatures?

_____ ºC

40. What is the median of the high temperatures?

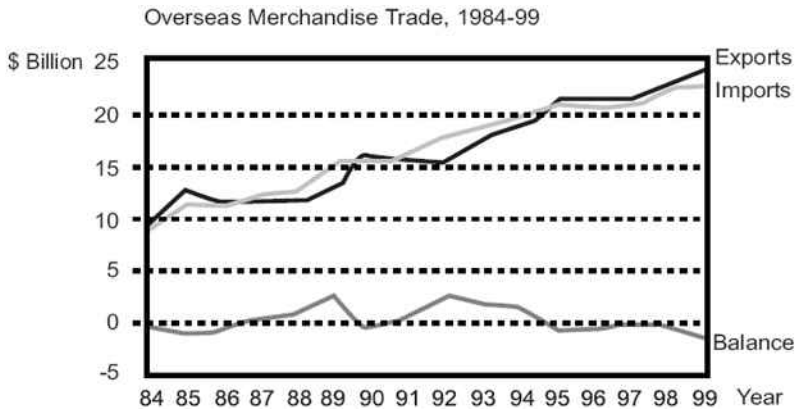
_____ ºC

End of Section

41. Which of the following is the perimeter of a square whose side measures 2a + 3?

- ⬭ 11a
- ⬭ 8a + 7
- ⬭ 8a + 3
- ⬭ 8a + 12

Use the following information to answer question42..

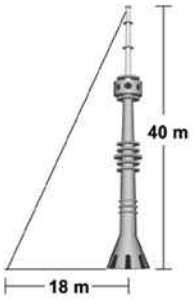


42. In the Overseas Merchandise Trade graph, how is the Balance related to the Exports and Imports?

- ⬭ Imports = Balance - Exports
- ⬭ Exports = Imports + Balance
- ⬭ Balance = Exports + Imports
- ⬭ Balance = Imports - Exports

End of Section

43. From a point 18 m from the base of a tower, a wire is stretched to an attachment 40 m up the tower.
How long is the wire, to the nearest metre?



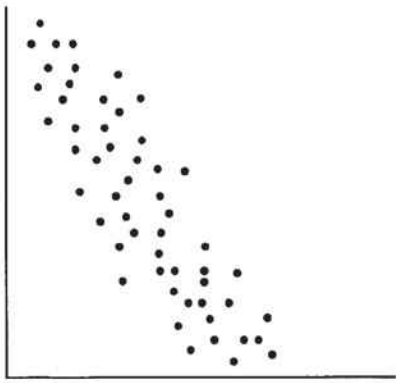
- ⬭ 58 m
- ⬭ 44 m
- ⬭ 36 m
- ⬭ 29 m

44. The median score is

Score	Frequency
1	3
2	4
3	3
4	10

- ⬭ 2.5
- ⬭ 3
- ⬭ 3.5
- ⬭ 4

45. 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.

46. The graph of $x^2 + y^2 = 16$ has

- ⬭ a radius of 16.
- ⬭ a centre of (0, 1).
- ⬭ a centre of (1, 0).
- ⬭ a radius of 4.

47. What type of relationship is this?

x	-2	-1	0	1	2
y	-11	-5	1	7	13

- ⬭ Linear
- ⬭ Parabolic / Quadratic
- ⬭ Hyperbolic
- ⬭ Cubic

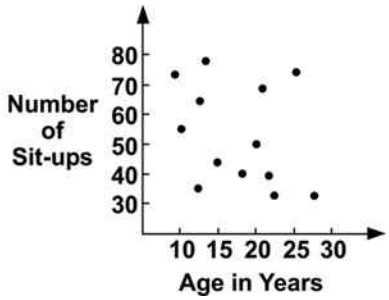
48. A company keeps a list of 50 employees and their annual salaries. The salary of the very highly paid president is added to this list.
Which of the following statistics is **MOST** likely to be approximately the same or nearly the same for the original list and the new list?

- ⬭ The highest salary
- ⬭ The range
- ⬭ The mean
- ⬭ The median

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

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

50. In the graph below, each dot shows the number of sit-ups and the corresponding age for one of 13 people.
According to this graph, what is the median number of sit-ups for these 13 people?



- ⬭ 15
- ⬭ 20
- ⬭ 45
- ⬭ 50
- ⬭ 55