02

Centre Number	Candidate Number

MINISTRY OF EDUCATION AND HUMAN RESOURCES DEVELOPMENT

SOLOMON ISLANDS YEAR 9 EXAMINATION

2018

MATHEMATICS

WEDNESDAY 7th NOVEMBER 9.00AM TIME: 2 Hours Plus 10 Minutes Reading Time

SECTION	CONTENT	MARKS
A	Multiple Choice Questions	20
B	Short Answer Questions	40
C	Long Answer Questions	40
	TOTAL	**100**

INSTRUCTIONS TO CANDIDATES

1. Do NOT open this Booklet until you are told to do so.
2. Write both your Centre Number and Candidate Number in the box provided at the top right hand corner and the back flap at the end of this booklet.
3. Before you answer the questions, read through the instructions carefully.
4. Write all your answers in the spaces provided in this Booklet.
5. Calculators should NOT be used.
6. Show all your workings for Sections B and C. You may lose some marks if you do not show your working.
7. Do NOT use correction fluid.
8. Mobile phones are NOT allowed in the Examination room.
9. Page **21** is left blank deliberately.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

THIS BOOKLET CONTAIN 22 NUMBERED PAGES.

SECTION A: MULTIPLE CHOICE (20 MARKS)

WRITE THE LETTER OF THE MOST CORRECT ANSWER IN THE BOX PROVIDED IN THE BACK FLAP AT THE END OF THIS BOOKLET.

1. 1 500 000 mg changed into kg is;

   A. 150 kg
   B. 15 kg
   C. 1.5 kg
   D. 0.15 kg

2. Which of the following would be the **best** unit to measure the capacity of a green coconut drink?

   A. Millilitres
   B. Litres
   C. Kilolitres
   D. Gallons

3. Simplify $\frac{1}{3^{-4}}$ is equals to;

   A. 81
   B. 64
   C. 27
   D. 12

4. The ratio of boys to girls in a youth club is 4: 5. There are 28 boys. How many girls are there in the youth club?

   A. 7
   B. 30
   C. 33
   D. 35

5. Find the value of *p* in the table below if ***x*** and ***y*** are directly proportional.

x	12	6
y	16	*p*

   A. 4.5
   B. 8
   C. 32
   D. 72

6. The scale of a map is 1: 500 000. The distance between two cities is 112 km. How far apart are they on a map in centimetres?

   A. 22.4 cm
   B. 56 cm
   C. 224 cm
   D. 560 cm

7. If Simple Interest **(I) = PRT**. Find the value of *P* when *I* = \$500, *R* = 2 % p.a and *T* is 5 years;

   A. \$5 000
   B. \$50 000
   C. \$500 000
   D. \$5 000 000

8. The ratio 20 cents to \$0.75 when simplified is equals;

   A. 5: 12
   B. 4: 15
   C. 4: 25
   D. 3: 15

9. 3.35×10^5 when written in its basic numeral is;

   A. 3 350 000
   B. 335 000
   C. 33 500
   D. 3 350

10. Express the recurring decimal $0.\overline{31}$ in fractional form;

   A. $\frac{31}{10}$

   B. $\frac{31}{100}$

   C. $\frac{3}{100}$

   D. $\frac{31}{1000}$

11. Find the gradient of the line $2x - 3y = 6$;

A. 3

B. $\frac{1}{2}$

C. $\frac{2}{3}$

D. - 2

12. The value of ***x*** for $-4(2x - 6) = 10x$ is equals;

A. $x = \frac{4}{3}$

B. $x = 12$

C. $x = -12$

D. $x = \frac{3}{2}$

13. Expand $(3k - 1)(k + 7) =$

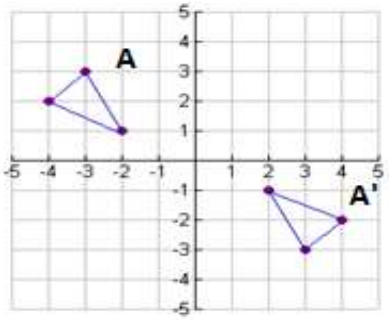
A. $k^2 - 21k$
B. $3k^2 - 7$
C. $3k^2 + 20k - 7$
D. $3k^2 + 21k - 7$

14. Factorise $10z^3 + 20z^2 - 10z$;

A. $10(z^3 + 2z^2 - z)$
B. $z(10z^2 + 20z - 10)$
C. $(5z + 2)(2z - 5)$
D. $10z(z^2 + 2z - 1)$

15. Which one of the following **transformations** is illustrated by the graph shown below?

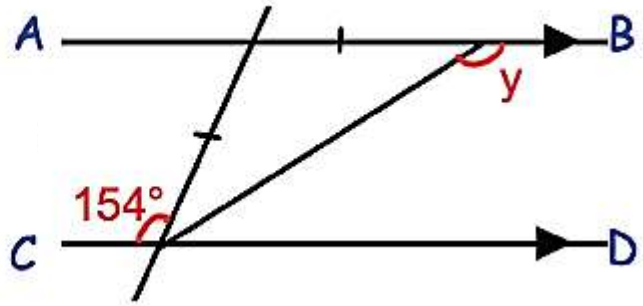
A. Rotation
B. Translation
C. Reflection in the Origin
D. Reflection in $y = x$



16. Point P^{l} (-2, 3) is the image of point P (-6, -4) under translation T. What is the image of (3, -2) under the same translation?

A. (1, -8)
B. (7, 5)
C. (9, 6)
D. (-1, -5)

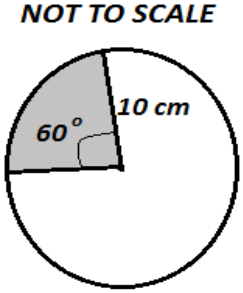
17. AB is parallel to CD.



The value the angle marked **y** in the diagram above is;

A. 167^0
B. 77^0
C. 26^0
D. 13^0

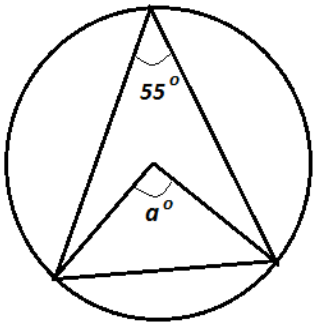
18. Find the **area** of the shaded part of the circle below with a radius of 10 cm to 2 decimal places. (Use π = 3.14)



A. 52. 33 cm^2
B. 314.00 cm^2
C. 523.33 cm^2
D. 5 233.33 cm^2

19. Which circle **theorem rule** is used to find angle labelled a^o in the diagram?

A. Opposite of a cyclic quadrilateral add up to 180^o.
B. The angle in a semi-circle is a right-angle.
C. Angle $\mathbf{a^0}$ is twice the size of angle 55^0.
D. Angles in the same segment are equal.



20. The mean weight of 10 players in a soccer team is 30kg. Another player joined the 10 players which raised the mean to 31. What is the weight of the 11^{th} player?

A. 30kg
B. 41kg
C. 55kg
D. 61kg

END OF SECTION A

Total marks for Section A: **20**

SECTION B: SHORT ANSWER QUESTIONS (40 MARKS)

SHOW YOUR WORKING AND WRITE THE ANSWER ON THE SPACES PROVIDED. ALL QUESTIONS ARE WORTH TWO (2) MARKS EACH.

21. A tank is $\frac{4}{5}$ full contains 2 000 litres. Find the capacity of the tank.

21. _____
(2 marks)

---

22. Simplify $81^{\frac{1}{2}} + 27^{\frac{1}{3}} - 2^3 =$

22. _____
(2 marks)

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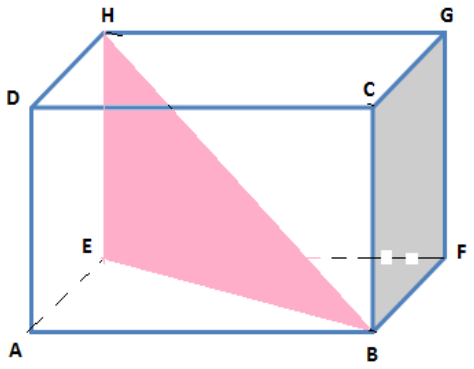
23. Consider a rectangular prism ABCDEFGH with the side lengths AB = 8, AE = 4 and EH = 6.

ALL MEASUREMENTS ARE IN CENTIMETRES



Calculate **BD**, leaving your answer in the exact form (or in surd/square root form).

23. _____
(2 marks)

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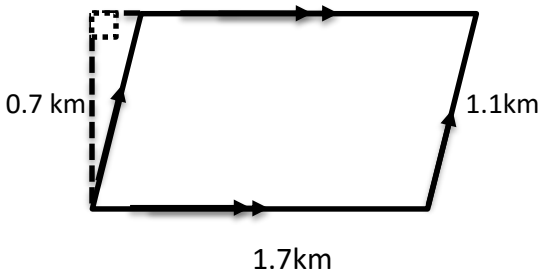
24. Calculate the area of the shape below in **hectares**.



24. _____
(2 marks)

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25. A rectangle is **twice** as long as it's width.

Find its **length** if the area is 158. 42 m^2, correct to 3 significant figures.

Important square root values
$\sqrt{15.8} = 3.9749$
$\sqrt{7.92} = 2.8142$
$\sqrt{79.2} = 8.8994$

25. _____
(2 marks**)**

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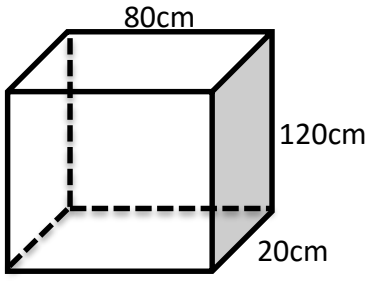
26. Find the volume of the cuboid below ***in litres.***



26. _____
(2 marks)

---

27. Simplify $\left[\frac{729m^{-9}}{m^{-9}}\right]^{\frac{1}{3}}$

27. _____
(2 marks)

---

28. (a) Convert **5 600 000** into standard form.

28 (a) _____
(1 mark)

(b) Convert **9.01×10^{-3}** into an ordinary number.

28 (b) _____
(1 mark)

---

29. If Messi's bank account of $904.20 increases to $1 350.30. Calculate the increase in percentage.

29. _____
(2 marks)

---

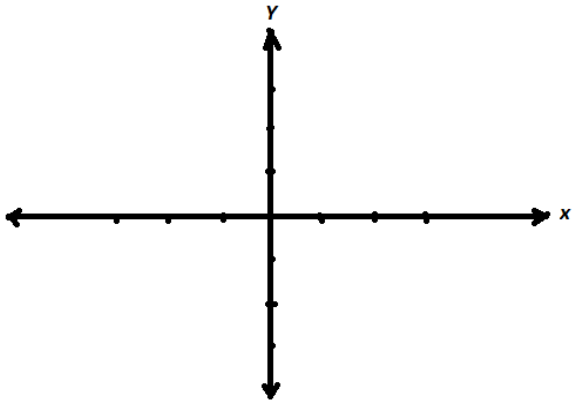
30. The ratio of t-shirts to jeans in a shop is 7: 3. If there are 203 t- shirts, how many jeans are there?

30. _____
(2 marks)

---

31. Find the gradient for this linear equation **2*x* + 3*y* = 3** and sketch its graph.

Gradient: = _____ (1 mark)



(1 mark)

_____

32. Simplify $\frac{a}{5a+a}$

32. _____
(2 marks)

_____

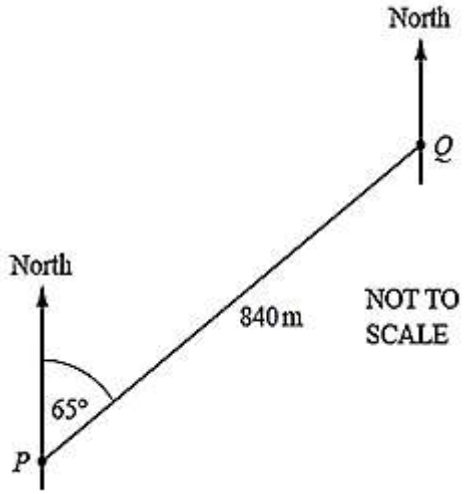
33. Expand and Simplify $2(3d-1)-(4d+5)$

33._____
(2 marks)

_____

34. The diagram shows a straight road PQ = 840 m and the bearing of Q from P is 065°.

Work out the bearing of P **from** Q.



34. _____
(2 marks)

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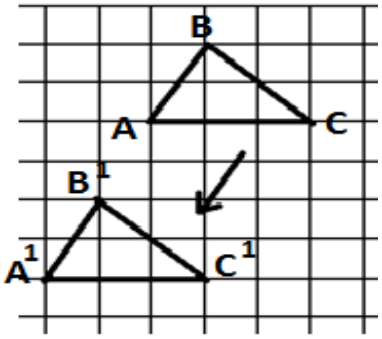
35. Write down the vectors/components for the translation shown below:



35. [_____]
(2 marks)

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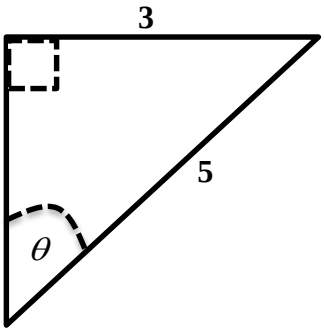
36. Find the ***cosine*** ratio of the angle marked θ in the diagram below correct to one decimal place.



36. _____
(2 marks)

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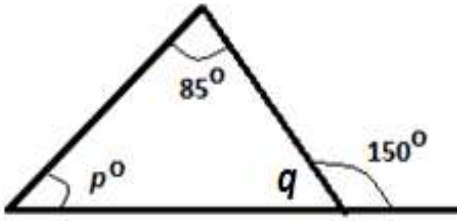
37. Determine the value of ***p*** in the diagram below.



37. _____
(2 marks)

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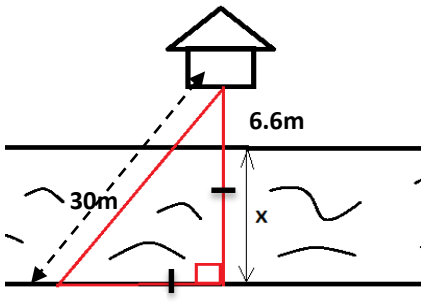
38. Find the **radius** of a circle with an area of 200.96 cm^2. (Use π = 3.14)

38. _____
(2 marks)

---

39. A hut that is 6.6 metres from one side of a river bank is sighted from the other side of the river. Other measurements are taken and are shown in the diagram below.

Tangent 45^0 = 1.00
Cosine 45^0 = 0.707
Sine 45^0 = 0.707



Find the width of the river (*marked x*) correct to two decimal places.

39. _____
(2 marks)

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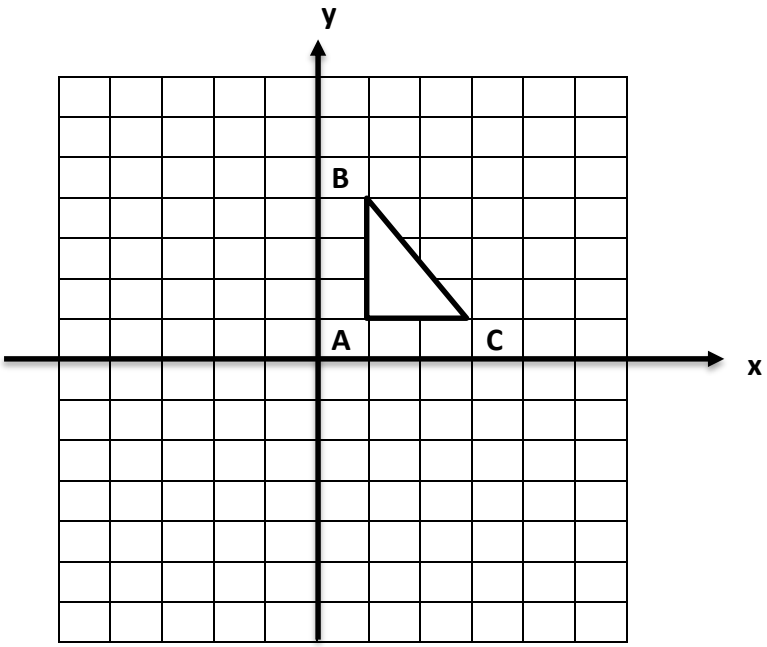
40. Rotate the shape below about the origin through - 90^0.



40. _____
(2 Marks)

_____

END OF SECTION B

Total marks for Section B: **40**

SECTION C: LONG ANSWER QUESTIONS (40 MARKS)

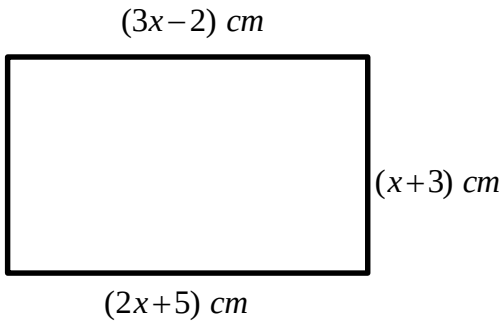
THERE ARE 10 QUESTIONS. SHOW YOUR WORKING AND WRITE THE ANSWERS ON THE SPACES PROVIDED.

41. Pio's age is 3 years more than twice Lydia's age. The sum of their ages is 39. How old are Pio and Lydia?

41. _____
(4 marks)

---

42. Find the **perimeter** of the rectangle shown below.



42. _____
(4 marks)

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43. A farmer uses fertilizers to improve his production. A fertilizer is made up of **2: 3: 4** ratio of nitrogen, potash, and phosphate respectively.

    (a) Calculate how many kilograms of nitrogen would there be in a 27 kg bag of fertilizer?

43 (a) _____
(2 marks)

    (b) Calculate how many kilograms of Phosphate would there be if 8.1 kg bag of fertilizer is used?

43 (b) _____
(2 marks)

---

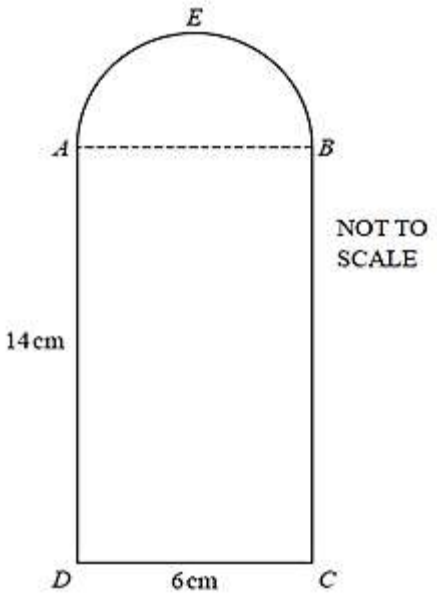
44. Two Police Officers just placed on the Island of Anuta have sufficient ration supplies for 7 days. If the skipper of their boat was forced to join them from the start, how long would the supplies last?

44. _____

(4 marks)

---

45. The diagram shows a door, AEBCD, from a model of a house.
ABCD is a rectangle and AEB is a semi-circle.
AD = 14 cm and DC = 6 cm.



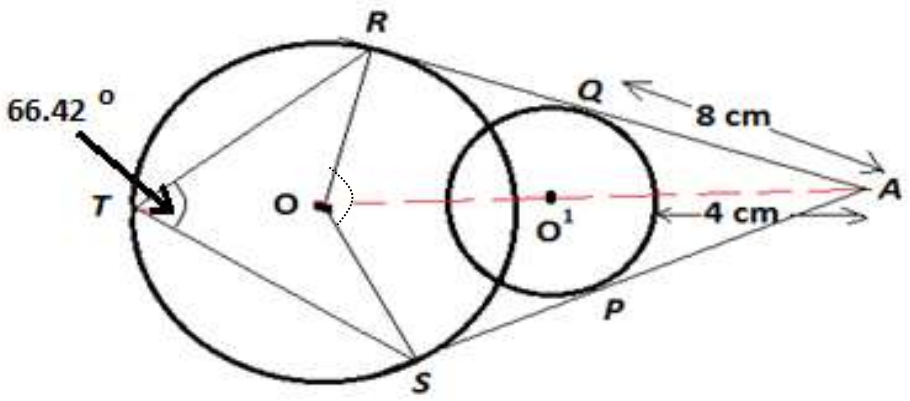
Find the **perimeter** of the door. *(Use π = 3.14)*

45. _____

(4 marks)

---

46. The diagram below shows two intersecting circles sharing common tangents *AR* and *AS*. Given the two centres *O* and O^1 and the point *A* are in a straight line.



Find the values of these angles;

(i) <*ROS*

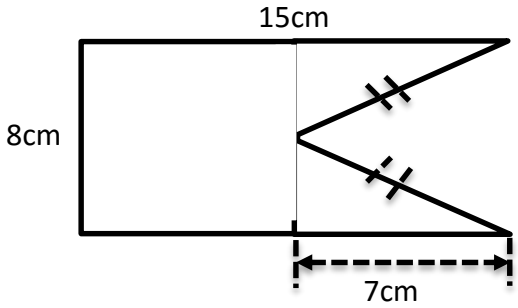
46 (i) _____
(1 mark)

(ii) <*RAS*

46 (ii) _____
(3 marks)

_____

47. The shape below is made up of a square and two triangles. Calculate the total area of the composite shape.



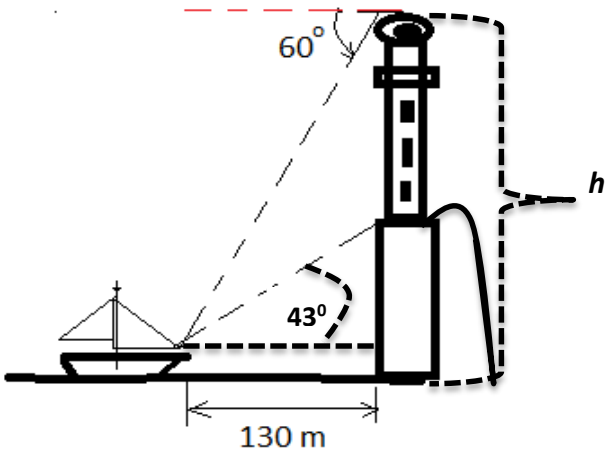
47. _____

(4 marks)

_____

48. A sailor on a yacht at sea sights the bottom of a lighthouse on a cliff at an angle of elevation of 43°, while the angle of depression from the top of the lighthouse to the yacht is 60°.

If the yacht is 130 metres from the base of the cliff and the sailor's eye is 1.4 m above sea level, find the **height** of the lighthouse and the cliff marked ***h***.



Some Trigonometric Ratios

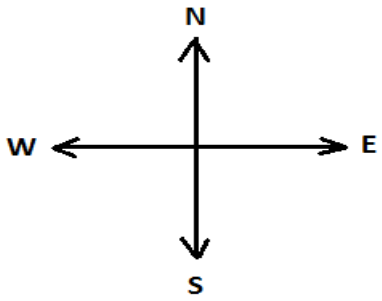
Tan 60° = 1.732	Tan 43° = 0.9325
Sin 60° = 0.8660	Sin 43° = 0.6820
Cos 60° = 0.5000	Cos 43° = 0.7314

48. _____

(4 marks)

_____

49. A ship travels due south for 5 km, then on a true bearing of 120^{o} for 11 km.



Some Trigonometric Ratios	
Tan 60° = 1.732	Tan 43° = 0.9325
Sin 60° = 0.8660	Sin 43° = 0.6820
Cos 60° = 0.5000	Cos 43° = 0.7314

(a) Find how far east is the ship from its starting point, correct to 2 decimal places.

49 (a) _____
(2 marks)

_____

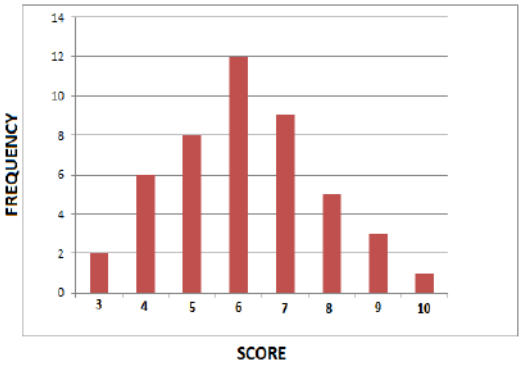
(b) Calculate the angle at which the ship makes with south direction when travelling on the bearing of 120^{0} ***(final answer in true bearing)***.

49. (b) _____
(2 marks)

_____

50. (a) **Complete the table below with reference to the graph shown on your right.**

Score (x)	Frequency (f)	Frequency x score (fx)
3		
4		
5		
6		
7		
8		
9		
10		



(2 marks)

(b) Calculate the Mean.

50. (b) _____

(2 marks)

THE END

Total marks for Section C: **40**

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SIY9 - MATHEMATICS 2018

CENTRE NUMBER			CANDIDATE NUMBER				

ANSWER SHEET - MULTIPLE CHOICE
You are to write the letter of the correct answer only

1		11	
2		12	
3		13	
4		14	
5		15	
6		16	
7		17	
8		18	
9		19	
10		20	

FOR MARKER USE ONLY

SECTION	MARKS	MARKER	SCRIPT CHECKER
A	20		
B	40		
C	40		
TOTAL	100		
Marker/ Checker Initials			