Centre Number	Candidate Number

MINISTRY OF EDUCATION AND HUMAN RESOURCES DEVELOPMENT

SOLOMON ISLANDS FORM THREE EXAMINATION

2015

MATHEMATICS

WEDNESDAY 4th NOVEMBER 9.00AM   **TIME: 2 HOURS plus 10 MINUTES**

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 of this page.
3. Before you answer the questions, read through the instructions carefully.
4. Write all your answers in the spaces provided in this Booklet.
4. Calculators should not be used.
5. Three figure tables are provided.
6. Show all your workings for Sections B and C. You may lose some marks if you do not show your working.
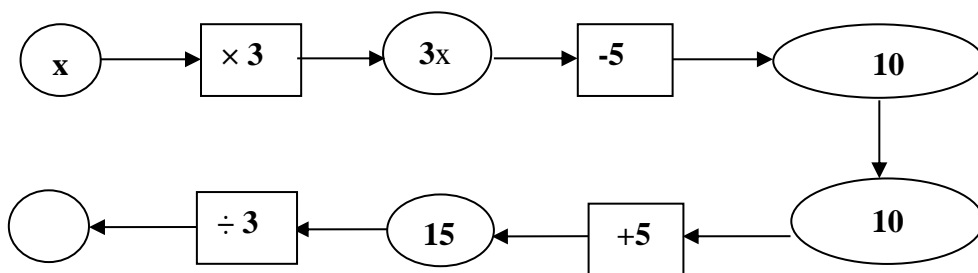
THIS BOOKLET CONTAINS 27 NUMBERED PAGES.

WRITE THE LETTER OF THE MOST CORRECT ANSWER IN THE BOX PROVIDED IN THE BACK FLAP.

_____

1.   Think of a number, add 2 then multiply by 3 equals 4. The algebraic equation is:

   A.   x + 2 x 3 = 4
   B.   (x + 2) 3 = 4
   C.   x + 6 = 4
   D.   2(x + 3) = 4
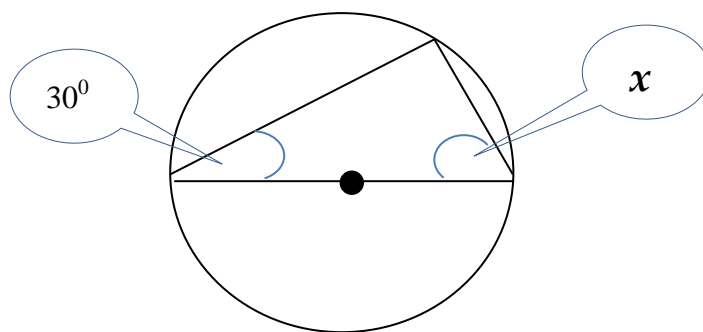
2.   From the number machine below the value of x is;

   A.   3
   B.   10
   C.   5
   D.   15

3. $4x + 9 = 41$, x is equal to:
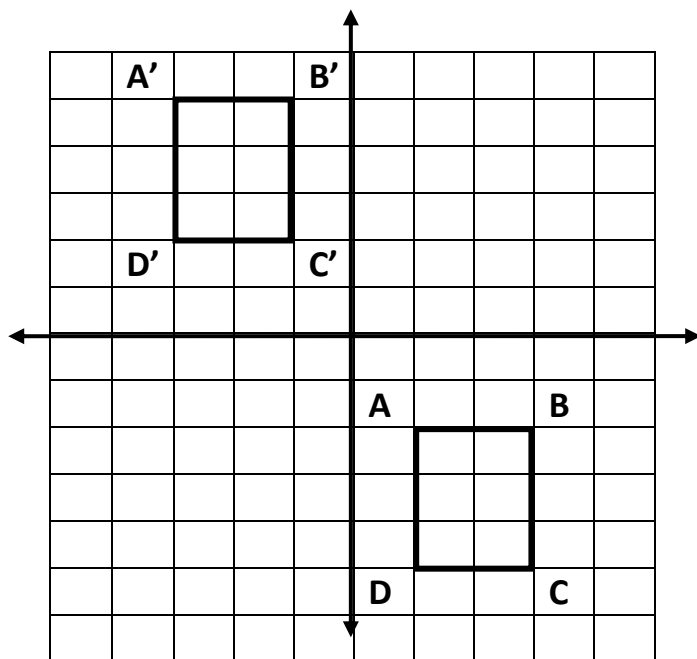
   A.   8
   B.   32
   C.   4
   D.   50

4. The angle marked x is equal to;

   A. 60^0
   B. 45^0
   C. 90^0
   D. 30^0

5. The translation of rectangle ABCD to rectangle A'B'C'D' is best described by which of the following;

   A. $\begin{pmatrix} 4 \\ 7 \end{pmatrix}$ B. $\begin{pmatrix} -4 \\ 7 \end{pmatrix}$ C. $\begin{pmatrix} -7 \\ 4 \end{pmatrix}$ D. $\begin{pmatrix} -4 \\ -7 \end{pmatrix}$

Study the graph below to answer questions 4 and 5. The graph shows the total rainfall for each month from January to July in Honiara in the year 2013.

Rainfall in Honiara
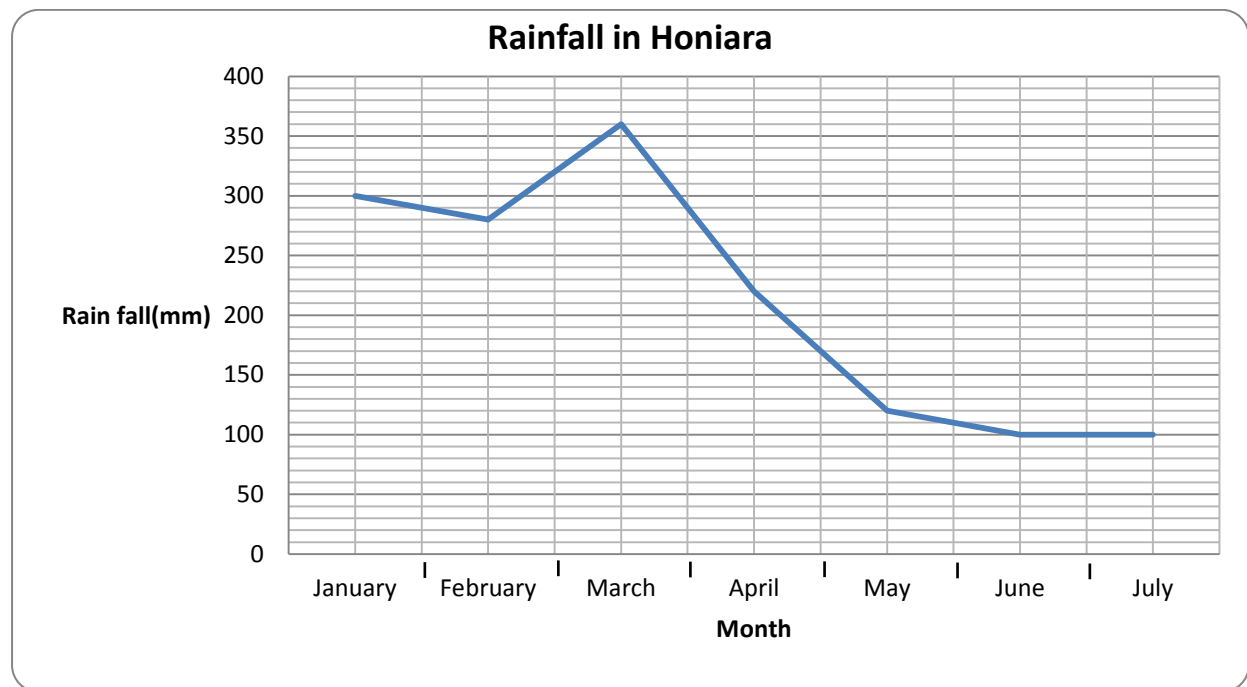
6.   What is the average rainfall (mm) between the months of January and April?

   A.   1160mm
   B.   290mm
   C.   1070mm
   D.   267.5mm

7.   The total rainfall from April to July is:

   A.   220 mm
   B.   320 mm
   C.   440mm
   D.   540mm

8. $3y = 2x - 6$ in the form of $y = mx + c$ is:

A. $y = \dfrac{2}{3}x - 2$

B. $y = \dfrac{2}{3}x - 6$

C. $y = \dfrac{2}{3}x - 3$

D. $y = -\dfrac{2}{3}x - 2$

9.   The gradient of the equation $y - \dfrac{x}{2} + 5 = 0$ is;

A.   ½x

B.   -5

C.   ½

D. x

10.   After selling their fish, Paul and Tom decided to share their profit of $1,250.00 in the ratio 3:7. Paul will receive;
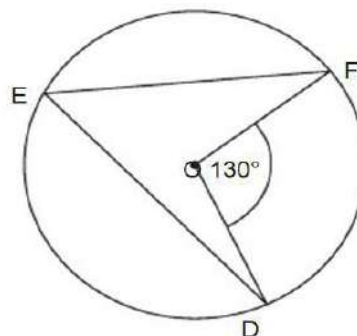
A. $125.00

B. $250.00

C. $375.00

D. $875.00

11.   Find the size of angle **DÊF**

A. 50^0

B. 55^0

C. 60^0

D. 65^0

4

12. 52,139,800 m^2 is equal to;

    A.   5.21398 x 10^8 cm^2

    B.   52.1398 x 10^9 cm^2

    C.   52.1398 x 10^{10} cm^2

    D.   5.21398 x 10^{11} cm^2

13. It takes a dolphin 45 minutes to travel a distance of 54,000 metres. What is its speed in kilometres per hour?

    A.   72 km/hr

    B.   18km/hr

    C.   1200km/hr

    D.   120km/hr

14. Lionel puts a 20% mark up and sells a pair of soccer shoe at $420.00. What is the *cost price*?

    A. $300.00

    B. $400.00

    C. $350.00

    D. $375.00

15. 0.000000178 in standard form is;

    A.   1.78 x 10^{-8}

    B.   1.78 x 10^{-7}

    C.   1.78 x 10^7
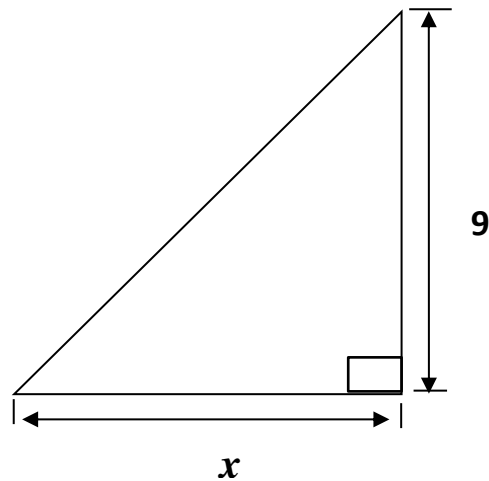
    D.   1.78 x 10^8

Use the data below to answer questions 16

A Form 5 student measured the heights of Grade 4 pupils in class for his Mathematics project. He recorded his findings in a table as shown below;
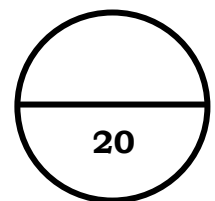
unit	Heights of Grade 4 pupils											
cm	120	125	145	134	152	125	135	152	145	120	134	134	136

16. What is the mode?

    A. 152 cm
    B. 145 cm
    C. 120 cm
    D. 134 cm

17. Which set of numbers below has a median and mean of 6?

    A. 1,2,3,6,7,8,9
    B. 2,5,5,6, 7,8,9
    C. 2, 2,3,6,7,7,8
    D. 3,5,5,6,7,8,9

18. Find the missing number if the average of the following numbers is 11.
    13, 9, 8, 10, 12, _____, 12, 11

    A. 13
    B. 12
    C. 10
    D. 11

19. A map has a scale of 1: 50,000. If the measurement on the map is 3.5cm, what is the **true distance** in kilometres?

    A. 1750 km
    B. 175km
    C. 17.5km
    D. 1.75 km

20. Which of the following *equations* would you use to calculate the value of x?

A. $x = 9 \tan 67^0$

B. $x = 9 \cos 23^0$

C. $x = 9 \sin 67^0$

D. $x = 9 \tan 23^0$

Total mark for MC Q1-Q20:

20

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

_____

21.   Expand and simplify $9n - 3(2n - 1) - 5$
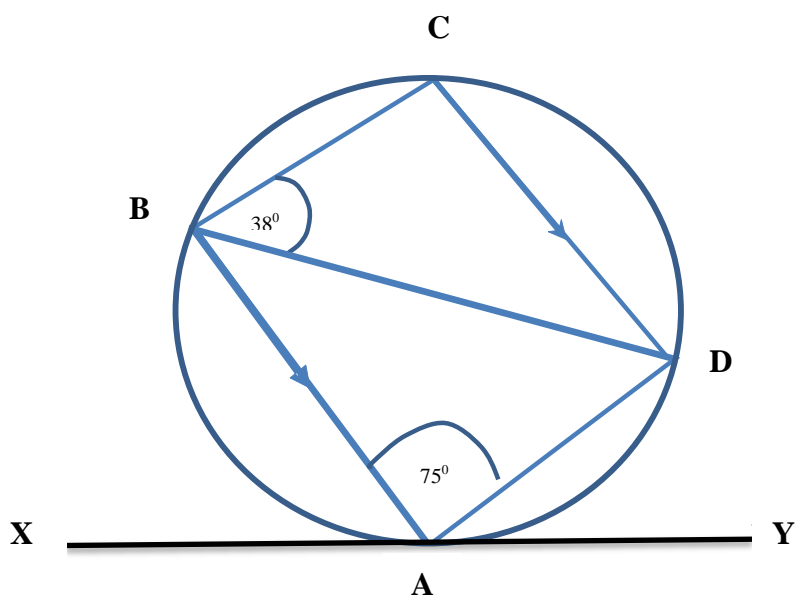
_____

(2 marks)

_____

22.   Solve $\dfrac{4}{5}x - \dfrac{2}{5}x = 14$

$x =$ _____

(2 marks)

_____

23.   Solve $-4(3 - t) = 6(t + 5)$

$t =$ _____

(2 marks)

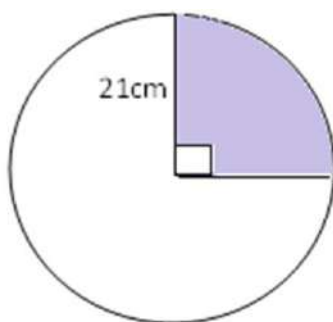**Use the diagram of a circle below to answer Question 24**

24.   Calculate the size of angle BĈD in the above diagram

Angle BĈD = _____

(2 marks)

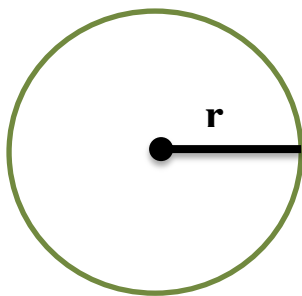_____

25.   Calculate the **shaded area** of the circle below;

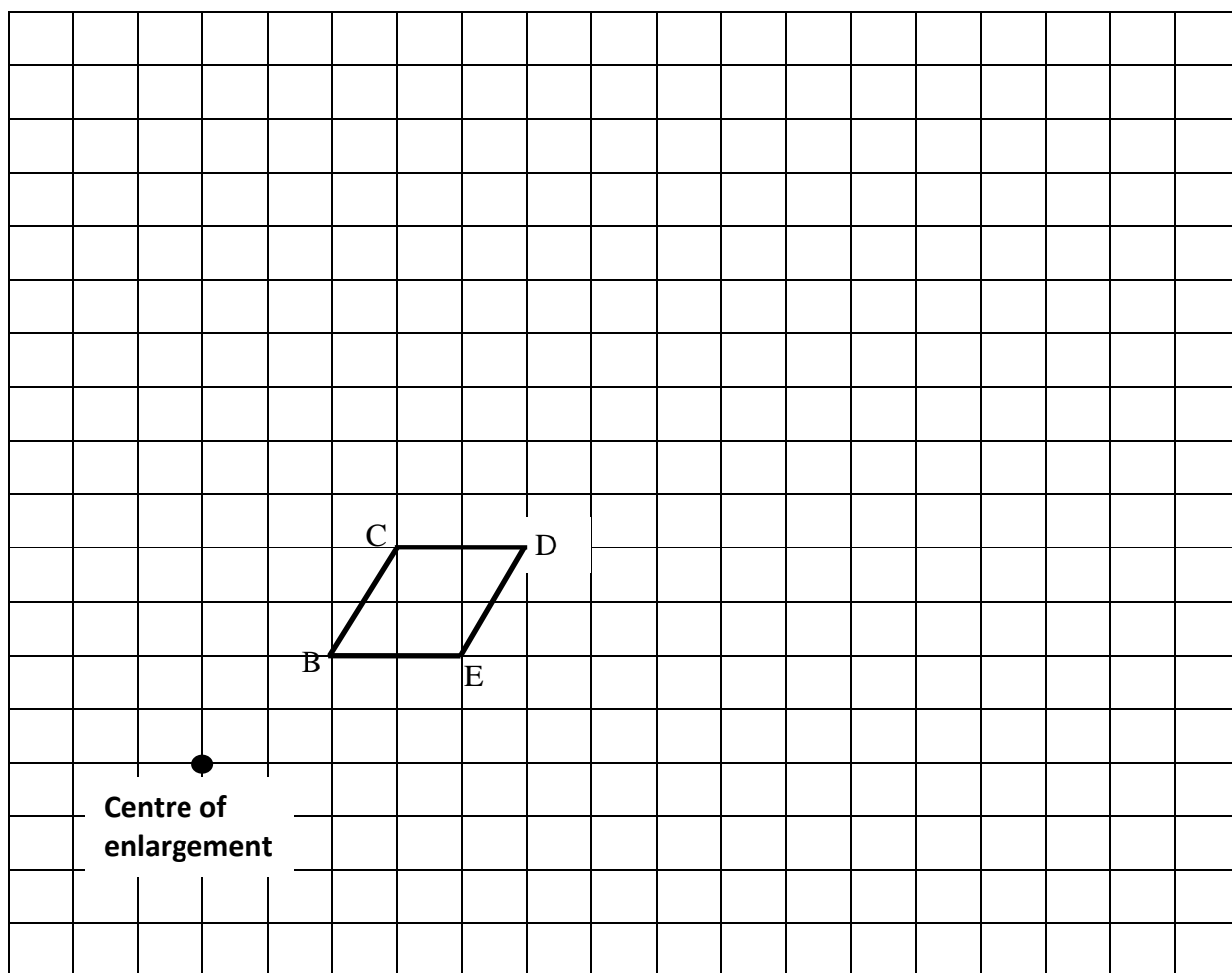Use $(\pi = \frac{22}{7})$

21cm

Area of sector: _____cm^2

(2 marks)

_____

26.   The area of a circle is 154 cm^2, calculate the **radius, r** using $\pi = \frac{22}{7}$
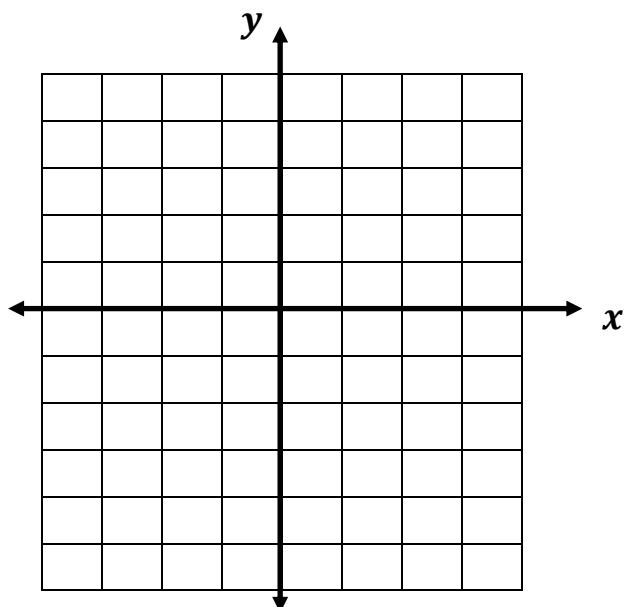

Radius =_____cm

(2 marks)
_____

27.   Enlarge the shape below using a scale factor of 2.

(2 marks)

28. **Sketch** the graph of $y = 3x + 2$

(2 marks)

_____

29. Simplify $\dfrac{35x^3y^4}{6x^2} \div \dfrac{7y^2x}{24x^4y}$

Answer = _____

(2 marks)

_____

30. A container that is $\frac{2}{5}$ full contains 4000ml. Calculate the *capacity* of the full container?

Capacity of the full container:_____
(2 marks)

_____

31. Patti buys a bicycle at $1,000.00 and sells it at $1,250.00. Find the **percentage mark up**.

Percentage mark up: _____
(2 marks)

_____

32. The ratio of bread to buns in a Bakery shop is 5:3. If there are 160 breads, find the number of buns.

Number of buns:_____
(2 marks)

_____

33. Calculate: $36^{\frac{1}{2}} + 8^{\frac{1}{3}}$

Answer:_____

(2 marks)

_____

34. Simplify $\dfrac{(12p^2q^4)^3}{(2p^3q^6)^2}$

Answer:_____

(2 marks)

_____

35. The time taken to boil water using firewood is **_directly proportional_** to the volume of the water. If it takes 15 minutes to boil 6 litres of water, how long will it take to boil 10 litres of water?
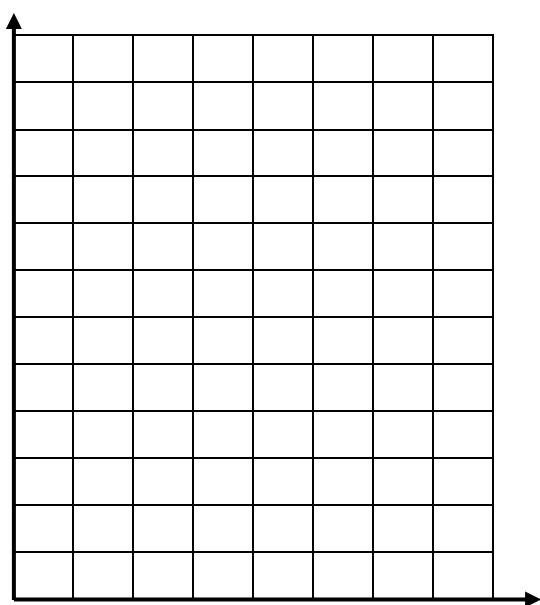
Answer: _____

(2 marks)

_____

36. It took 30 minutes to walk from the village to the school. The average speed along the way was 10 km/hr. How many kilometres away is the village from school?

Distance (km): _____

(2 marks)

_____

Study the frequency table carefully and answer questions 37 and 38.

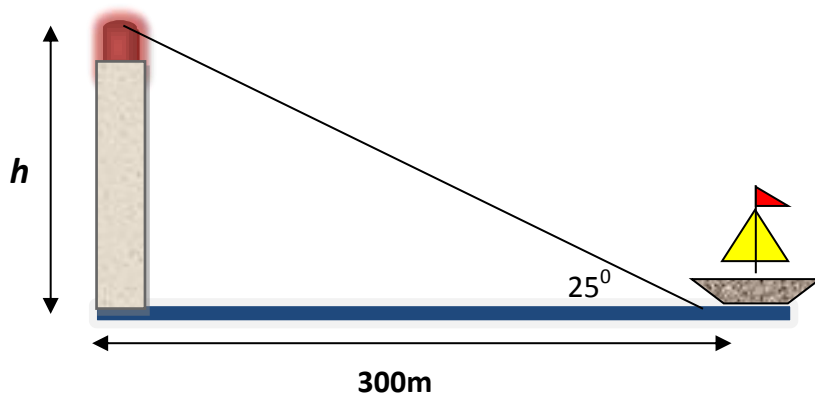37. Use information from frequency table to draw a bar graph

Frequency table

Score(x)	Frequency(f)
1	4
2	7
3	2
4	5
5	3
6	6

(3 marks)

_____

38.   What is the modal score?

Modal score =_____

(1 mark)

_____

39.   The angle of elevation to the top of a light house from a sailing boat that is 200m from the base is 37^0
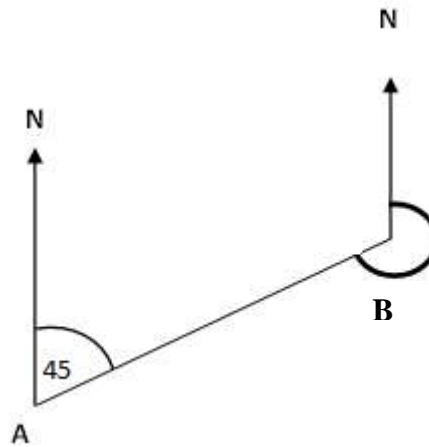
Cos 25^0 = 0.906
Sine 25^0 = 0.423
Tan 25^0 = 0.466

25^0

h

300m

Calculate the height of the light house.
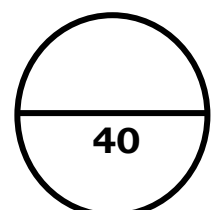
Height = _____ m

(2 marks)

_____

40. What is the bearing of point A from Point B?

Answer: _____

(2 marks)

_____

Total mark 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.   Martin is three times the age of his son, the sum of their age is 48 years.

a)   How old is his son?

Answer: _____
                                                              (2 marks)

b)   How old is Martin?

Answer: _____
                                                              (1 mark)

_____

42. The price of a mobile phone is **P** dollars and discounted by ten dollars. Twenty students pay the discounted price and the total is $3000.00.
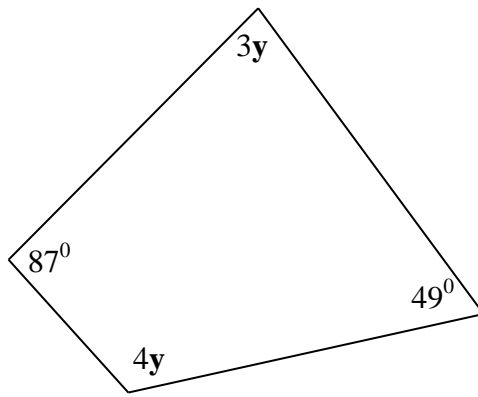
a) Write an equation involving **p**?

Equation: _____

b) Solve the equation

P = _____

43.

a) Calculate the value of **y**

y = _____

(2 marks)

b) What is the size of angle $3y$?

3**y** = _____

(1 mark)

c) What is the size of angle 4**y**?

4**y** = _____

(1 mark)
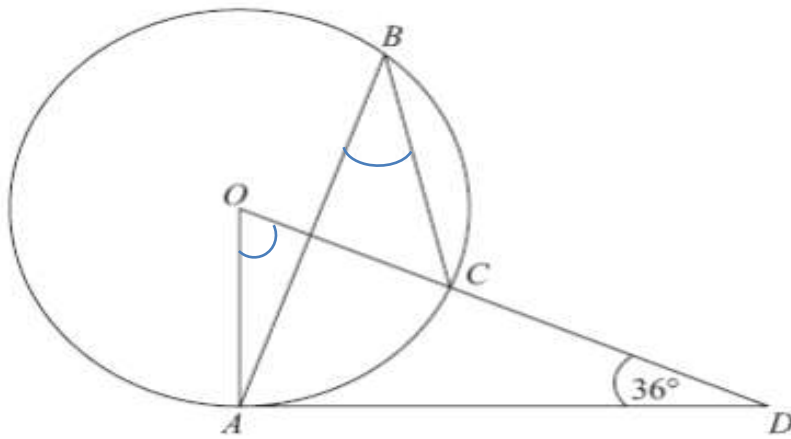
_____

44. Find the equation of the line below

a) Find the gradient of the line

Gradient: _____
(2 marks)

b) Write down the equation line

Equation: _____
(2 marks)

_____

45. The diagram above shows a circle centre *O*, *A*, *B* and *C* are points on the circumference. *DCO* is a straight line. *DA* is a tangent to the circle.
Angle **ADO** = 36°

(a)   Work out the size of angle AÔD

Angle AOD: _____

(3 marks)

(b)   Work out the size of angle **ABC**.

Angle ABC:_____

(1 mark)

_____

46. Mr. John invested $6,500.00 in a commercial bank at 4.5% interest per annum. He decided to withdraw his money after 5 years.
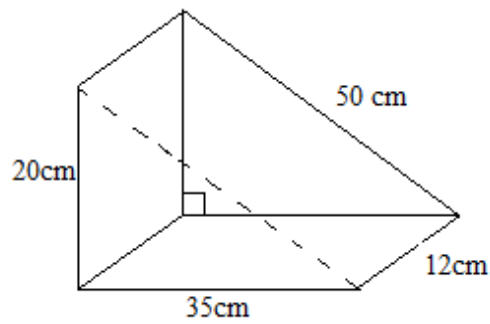
a) Calculate his simple interest after 5 years.

Simple Interest: $_____

(2 marks)

b) Calculate the total amount he will receive after 5 years.

Total Amount: $_____

(1 mark)

_____

47.

a)   Calculate the total area of 2 triangle-shaped sides.

Total area of triangle-shaped sides: _____ cm^2
(2 marks)

b)   Calculate the total area of 3 rectangle-shaped sides

Total area of 3 rectangle-shaped sides: _____cm^2
(3 marks)

c)   Calculate the total surface area

Total Surface Area = _____cm^2
(1 mark)

_____

47. The speed of light is usually 300,000 kilometres per second (km/sec).

   a) Calculate the distance it covers in 1 minute. Write your answer in standard form

   Distance (m): _____

   (2 marks)

   b) Calculate the distance it covers in 1 hour. Write your answer in standard form

   Distance (in hr): _____

   (2 marks)

_____

48. The distances in kilometers travelled by 60 students to school are shown below:

7, 5, 10, 11, 12, 6, 2, 4, 9, 10, 11, 1, 3, 15, 3, 8, 8, 16, 4, 14, 15, 3, 5, 9, 12. 16, 4, 14, 15, 3, 5, 9, 12, 7, 5, 10, 11, 12, 6, 2, 4, 9, 13, 15, 3, 8, 8, 16, 9, 6 6, 2, 4, 9, 10, 11, 1, 3, 15, 3

a) Complete the frequency tally table for the data above (3 marks)

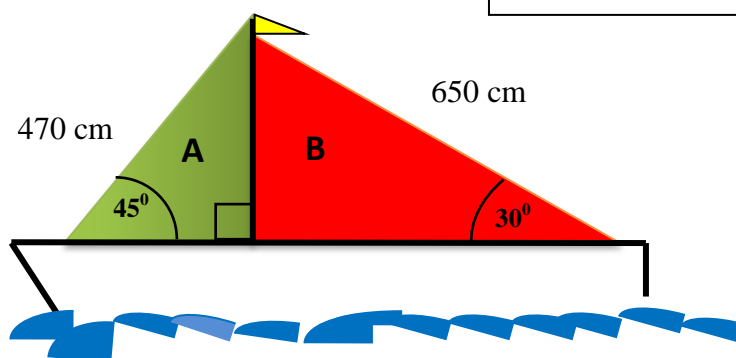| Scores (x)	Tally	Frequency(f)	fx
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
Total			

b) What is average distance travelled by the students to school?

Average distance: _____
(1 mark)

49. Jack has two sails on his yacht, **A** and **B** as shown below.

Additional information

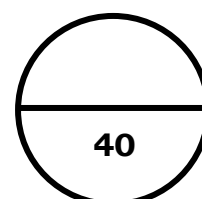|	
Sine 30^0 = 0.5	Sine 45^0 = 0.7
Cos 30^0 = 0.9	Cos 45^0 = 0.7
Tan 30^0 = 0.6	Tan 45^0 = 1

a) Using additional information above, calculate the height of the green sail (A).

Height: _____ cm

(2 marks)

b) Using additional information above, calculate the bottom length of the red sail (B).

Bottom length: _____ cm

(2 marks)

_____

Total mark for Section C:

40

SIY9 – MATHEMATICS 2015

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	SCORE
A	20	
B	40	
C	40	
TOTAL	100	
Marker's Initial		