



YEAR 9 Stage 5.3

TERM 3 ASSESSMENT

2015

Weighting: 20% of Assessment Mark.

STUDENT NAME: _____

TEACHER: _____

MARK: _____ /60

TIME ALLOWED: 45 minutes.

DIRECTIONS:

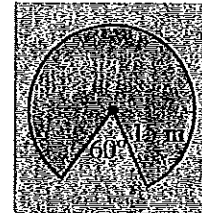
- Answer all questions.
- Show all necessary working where more than one mark is allocated to a question.
- Full marks may not be awarded for answers only.
- Marks may not be awarded for badly arranged work.
- Calculators are allowed

Section 1 - Area, Surface Area & Volume (7 marks)

Marks

1. Calculate the area of the following figure, correct to two decimal places.

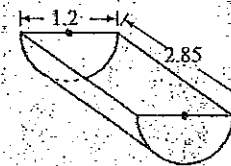
2



2. Calculate the surface area of the following figure.

Correct to 3 significant figures and all measurements are in centimetres.

3

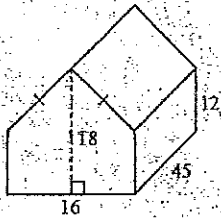


Section 1 continued

Marks

3. Calculate the volume of the following figures *all measurements are in centimetres, correct to one decimal place.*

2



Section 2 – Probability (19 marks)

Marks

1. Describe each of the following events using the terms impossible, unlikely, even chance, likely or certain.

(a) An even number less than 2 results when a die is rolled.

1

(b) A die is rolled and a 4 is the result.

1

(c) A card is drawn from a deck of cards and it is a black card.

1

Section 2 continued

Marks

2. List the sample space of a die being rolled.

1

3. A bag contains 5 red marbles, 2 yellow marbles and 1 green marble. Two marbles are drawn at random in succession with replacement.

Find the probability:

(a) That the first marble drawn is red.

1

(b) A red marble drawn first followed by a green marble.

2

4. A die is rolled and a coin is tossed.

(a) Complete the tree diagram.

2

(b) What is the probability of tossing a tail and rolling an even number? 1

(c) What is the probability of tossing a head and rolling at least a 2? 1

5. The two-way table below represents data collected from 400 people, and compares gender and participation in exercise:

	Male	Female
Exercise	166	106
No exercise	84	44

From the population represented in the table, find the probability of selecting:

(a) a male that does not exercise 1

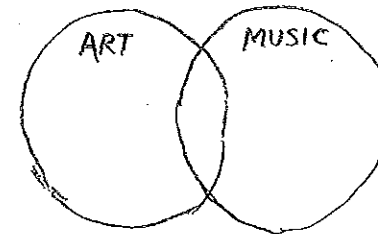
(b) either a male or female that exercises 2

Section 2 continued

Marks

6. In year 9 at Mt Random High School, every student must do Art or Music. In a group of 100 students surveyed, 47 do music and 59 do art.

(a) Complete the Venn diagram using the information above. 2



If one student is chosen at random from year 9, find the probability that this student does:

(a) both Art and Music 1

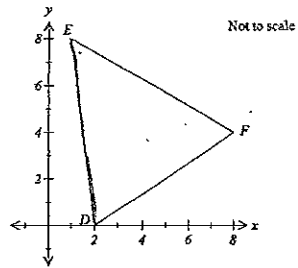
(b) only Art 1

(c) only Music 1

Section 3 – Coordinate Geometry (21 marks)

Marks

1.



The points D , E and F have coordinates $(2,0)$, $(1,8)$ and $(8,4)$ respectively.

Find the:

(a) Distance between D and E , correct to nearest whole number.

2

(b) Gradient of the line DF .

2

(c) Equation of the line DF , in general form.

2

Section 3 continued

Marks

2. Given the Midpoint of an interval AB is $M(-2, 3)$ and A is $(1, 6)$, find the point B .

2

3. Find the equation of the line that is parallel to the line $2x - y - 10 = 0$ and passes through the point $(4, -1)$.

3

4. Prove that the point $(-6, 4)$ lies on the line $y = 2 - \frac{x}{3}$.

2

Section 3 continued

Marks

5. Find the gradient and the y-intercept of $2x+3y-9=0$.

2

Section 3 continued

Marks

7. Complete the table of values and graph the curve on the number line provided for the equation

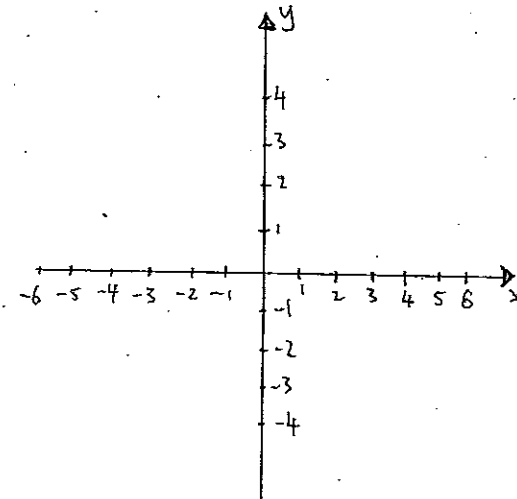
$$y=4-x^2$$

x	-3	-2	-1	0	1	2	3
y							

2

6. Sketch $y=2x-4$ by finding the x & y intercepts.

3



1

Section 4 – Statistics (13 marks)

Marks

1. (a) Complete the table below.

1

Score (x)	Frequency (f)	Cumulative Frequency
15	1	
16	5	
17	9	
18	7	
19	3	

From the table above calculate the:

(b) Mean

1

(c) Median

1

(d) Range

1

2. The times (in minutes), spent in a shop for both men and women are recorded below. Determine the difference between the median scores of both the men and women.

SCORES ON A CLASS TEST		
MEN		Women
9 8 8	0	6
5 4 4 2 2	1	2 2 5 8
9 3 1 1	2	1 3 3 4 5 5 6
5 4 2	3	2 2 4

2

Section 4 continued

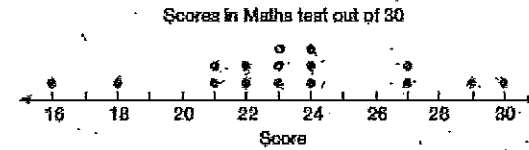
Marks

3. Find the interquartile range from the following sets of data:

(a) 6, 3, 4, 5, 6, 9, 5, 6 & 2

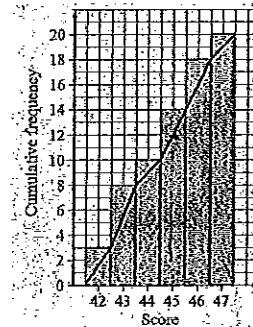
2

(b)



2

4.



(a) What is the median mark?

2

(b) How many students scored 45?

1

Section 1

1. $A = \text{Area of entire circle} \times \frac{\theta}{360}$

here in the shaded sector, θ is $360^\circ - 60^\circ = 300^\circ$

Radius = 15m.

Total Area = $2\pi r = 30\pi \text{ m}^2$

So Area of sector = $30\pi \times \frac{300}{360}$

= $30\pi \times \frac{5}{6}$

= $\frac{150\pi}{6} = 25\pi \text{ m}^2$

2. we have 4 surfaces on this half cylinder.



2 + 3 go together to make a circle with area $\pi r^2 = \pi (0.6)^2$

1 is a rectangle with area

$2.85 \times 1.2 = 3.42$

Area 4 is a rectangle with height 2.85 and length half circumference.

= $2.85 \times r \times \pi$

Marcellin Year 9

Stage 5.3

Term 3 Assessment

SAMPLE SOLUTIONS

Adding them all together

$0.36\pi + 3.42 + 1.71\pi$

= $3.42 + 2.07\pi$

≈ 9.923 cm^2 (3dp.)

3. The solid is a triangular prism atop a rectangular prism.

For Rect. Prism = $12 \times 16 \times 45 = 8640 \text{ cm}^3$

For the Triangular prism.

Height = $18 - 12 = 6$.

So area = $\frac{6 \times 16 \times 45}{2}$

= 2160 cm^3

V = $8640 + 2160$

= 10800 cm^3

Section 2

1. a) Even number less than 2.

⇒ Impossible

b) 4 from a single die roll

= $\frac{1}{6} < 50\%$

⇒ Unlikely

c) Card is drawn from deck of cards is black.

Assuming without Jokers

= $\frac{26}{52} = 0.5 = 50\%$

⇒ Even chance.

2. Sample space = all possible results

= $\{1, 2, 3, 4, 5, 6\}$

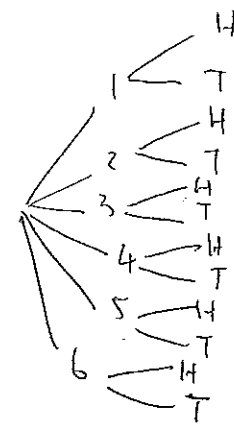
3. SR, 2Y, 1G.

a) $\frac{5}{5+2+1} = \frac{5}{8}$

b) $\frac{5}{8} \times \frac{1}{7} = \frac{5}{56}$

Probability of Red First
Probability of Green Second

4. a) Die, then coin



let H be heads
let T be tails

TOTAL POSSIBLE RESULTS = 12.

b) tossing tail and even number.

$\{2T, 4T, 6T\}$

So $\frac{3}{12} = \frac{1}{4}$ is the probability.

c) Tossing head and rolling at least a 2.

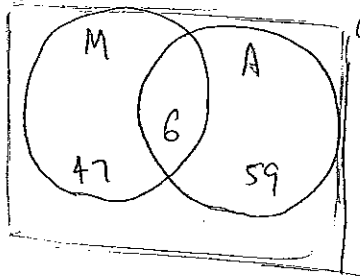
$\{2H, 3H, 4H, 5H, 6H\}$
= $\frac{5}{12}$

5. Total sample space = 400.

a) $\frac{84}{400} = \frac{21}{100}$

b) $\frac{166+106}{400} = \frac{17}{25}$

6



let M denote music
and A denote Art

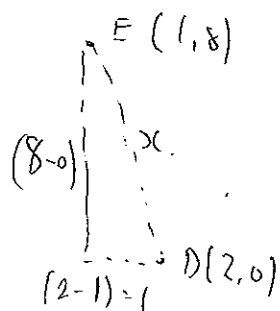
a) both Art and music

$$= \frac{6}{100} = \frac{3}{50}$$

b) only Art = $\frac{53}{100}$

c) only music = $\frac{41}{100}$

Section 3



$$x = \sqrt{8^2 + 1^2}$$

$$= x = \sqrt{65} \approx 8.06$$

$x = 8$ units (nearest whole number)

$$b) M_{OP} = \frac{4-0}{8-2}$$

$$= \frac{4}{6} = \frac{2}{3}$$

c) DF in general form.

$$y - y_1 = m(x - x_1)$$

lets use point D(2,0) for
reference

$$y - 0 = \frac{2}{3}(x - 2)$$

$$y = \frac{2}{3}(x - 2)$$

$$3y = 2x - 4$$

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

2. Midpoint formula.

$$\left\{ \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right\} = (-2, 3)$$

let A be (x_1, y_1)

$$\frac{1 + x_2}{2} = -2 \rightarrow x_2 = -5$$

$$\frac{6 + y_2}{2} = 3 \rightarrow y_2 = 0$$

so B = $(-5, 0)$

3. parallel to $2x - y + 10 = 0$
passes through $(4, -1)$

$$y = 2x - 10$$

$m_{line} = 2$.

so a line parallel would have the
same gradient.

$$\text{using } y - y_1 = m(x - x_1)$$

$$y - (-1) = 2(x - 4)$$

$$y + 1 = 2x - 8$$

$$y = 2x - 9$$

