FORM THREE MARKING SCHEME

1. $^{3}/_{5} \times 60 - {}^{8}/_{3} \times {}^{3}/_{2}$ — M1 simplification of numerator

$^{45}/_{8} \times {}^{16}/_{9} - {}^{5}/_{4} \times {}^{24}/_{5} + {}^{14}/_{5} \times {}^{10}/_{7}$

$\frac{36 - 4}{10 - 6 + 4}$ — M1 simplification of denominator

$^{32}/_{8} = 4$

2. $3^{3x} \times 3^{(2x-2)} = 3^{2(x+2)}$ — M1 expressing in index form

$3x + 2x - 2 = 2x + 4$ — M1 relating index

$3x = 6$

$x = 2$

3. Exterior $\angle = \frac{360}{n}$

Interior $\angle = 180 - \frac{360}{n}$

$180 - \frac{360}{n} = 5\left(\frac{360}{n}\right)$ — M1

$\frac{180n - 360}{n} = \frac{1800}{n}$ — M1

$180n = 2160$

$n = 12$ — A1

4. The dimensions of a brick are 2cm x 3.4cm x 6.42cm. Find the percentage error in the calculation of its area. (3 mks)

Relative error = 0.5/2 + 0.05/3.4 + 0.005/6.42 = 0.26548 .....m1

Working Product = 2 x 3.4 x 6.42 =43.656.....m1

Percentage error = 0.26548/43.656 x 100 = 0.608%.....A1

5. Masses of three babies was stated as a=12.7kg, b=9.8 kg and c=3.20kg. find the relative error in the following expressions:

(a) a+b-c (3mks)

Absolute error = 0.05 + 0.05 + 0.005 = 0.105.....m1

Working (a+b-c)= 12.7+9.8-3.2 = 19.3.....m1

Relative error = 0.105/19.3 = 0.005440.....A1

(b) c÷ab (3mks)

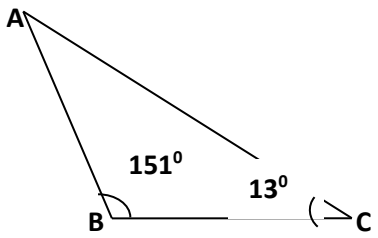
Relative error = 0.05/12.7 + 0.05/9.8 + 0.005/3.2 = 0.01060

6. Find the relative error in using 0.3 as the estimate of 1/3. (2mks)

Absolute error = 1/3 – 3/10 =1/30.....m1

Relative error = 1/30 ÷ 1/3 = 1/10.....m1

7. Find the length of **AC** of triangle **ABC** in which **AB**=5cm, <**ABC**=151^0 and <**BCA**=13^0. (3mks)

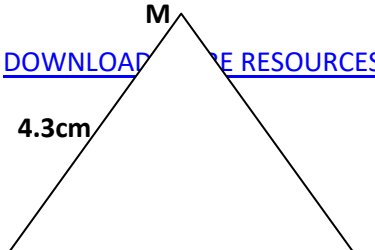


5/ Sin 13= AC/ Sin 151 m1

AC = 5Sin 151/Sin 13 m1

=10.78cm A1

8. In a triangle **LMN**, <**L**=81^0, **n**=4.3cm and **m**=3.5cm. Calculate
   a) Length ***l*** (2marks)
   b) Angles **M** and **N** (3marks)



81^0

a) $L^2 = 4.3^2 + 3.5^2 - 2 \times 4.3 \times 3.5\cos 81^0$ ***M2***

$\Longrightarrow$ ***L = 5.10 cm***

5.1/ Sin 81 = 4.3/Sin N

Sin N = 4.3Sin81/5.1

Sin N = 0.8328 ***M2***

N = 56.38^0

M = 180 – (81+56.38) =42.62^0 ***A1***

9. In triangle **ABC**, <**B**=61^0, and **b** = 5.3cm. find the radius of the circle passing through the vertices **A**,**B** and **C** (3marks)

5.3/Sin 61 =2R

R = 5.3/2 Sin 61^0

R = 3.03 cm

10. (a) Modal class 150 – 154 ***B1***

Class	***f***	***cf***
140 – 144	***3***	***3***
145 – 149	***16***	***19***
150 – 154	***20***	***39***
155 - 159	***10***	***49***
160 – 164	***1***	***50***

B1 ***C.F***

$$M = L + {}^{n}/_{2} - c \times i \over f$$

$$= 149.5 + \frac{25 - 19}{20} \times 5$$

M1

$$= 151$$

11. Use completing square method to solve for X in.

$\frac{1}{2} x^2 - 5/2x + 1 = 0$ (3marks)

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

$x^2 - 5x + C = -2 + C$

$x^2 - 5x + (5/2)^2 = -2 + 6.25$

$(x - 5/2)^2 = 4.25$

$X - 2.5 = \pm 2.061$

$X = \pm 2.061 + 2.5$

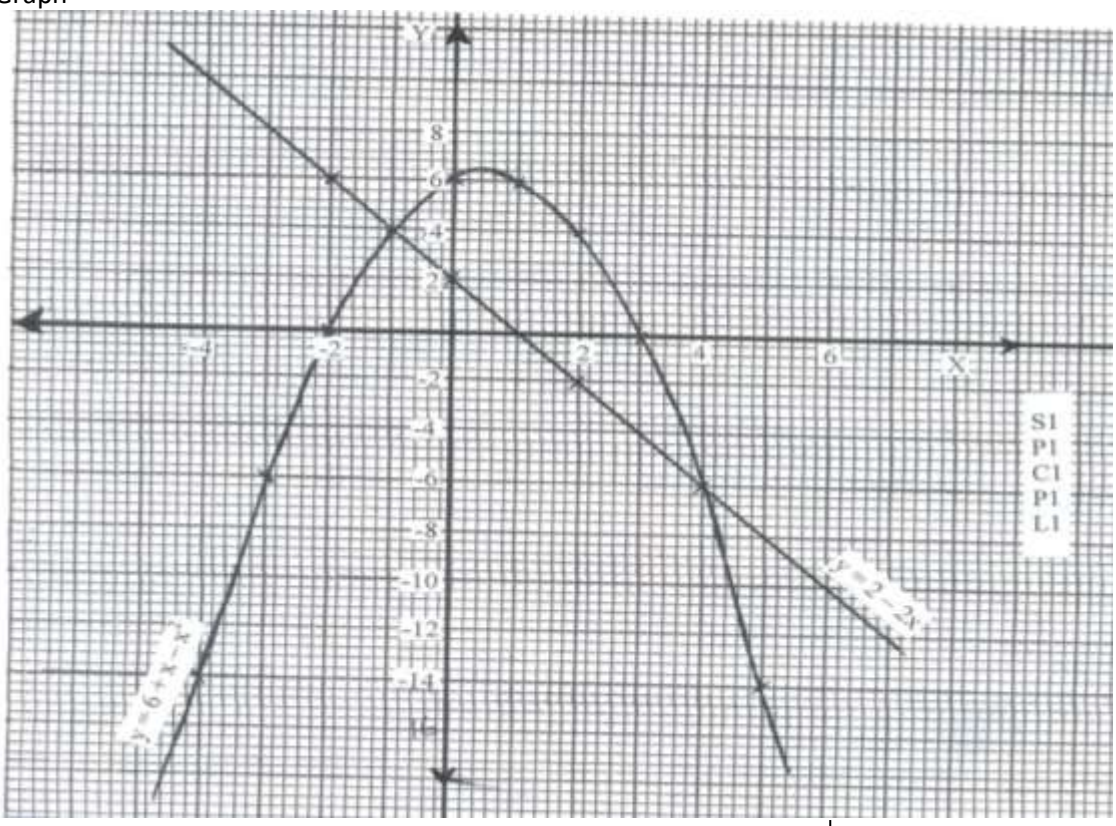
$X = 2.561$ or 0.439

22.

x	-4	-3	-2	-1	0	1	2	3	4	5
y	-14	-6	0	4	6	6	4	0	-6	-14

B2 b1 for 4 √ values

(b) Graph



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(d) x =-1 or x = 4 B1

(e) $(x + 1)(x - 4) = 0$ M1

$x^2 - 4x + x - 4 = 0$

$x^2 - 3x - 4 = 0$ A1

10