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121 - ALT A
MATHEMATICS
FORM 3 END OF TERM EXAMINATIONS
MARCH-2018 TERM 1
TIME: 60 MIN

CANDIDATE'S SCORE

FOCUS A365

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Kenya certificate of secondary education (K.C.S.E) Assessment Test

Answer All Question Provided In This Question Paper (30 MARKS)

1 Omondi has 6 cans of regular soda and 15 cans of diet soda. He wants to create some identical refreshment tables that will operate during the Gor Mahia football game. He also doesn't want to have any sodas left over. What is the greatest number of refreshment tables that Omondi can stock? **2 mks**

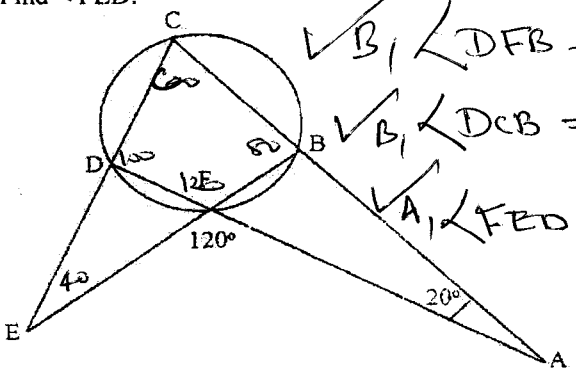
6, 15

∴ GCD or H.C.F = 3 ✓ A_1

3	6	15
	2	5

✓ M_1

2 In the diagram below < CAD, = 200, < AFE = 1200 and BCDF is a cyclic quadrilateral. **3 mks**
Find < FED.



B_1 $\angle DFB = 120$ (Vertically opposite angles)

B_1 $\angle DCB = 60$ (Opposite angles of a cyclic quadrilateral add up to 180°)

A_1 $\angle FED = 40°$ (angles of a triangle add up to 180°)

3 By correcting each number to one significant figure, approximate the value of **3 mks**
788 × 0.006. Hence calculate the percentage error arising from this approximation.

To 1 S.f

$800 \times 0.06 = 4.8$

Real Value $= 788 \times 0.006$
$= 4.728$ B_1

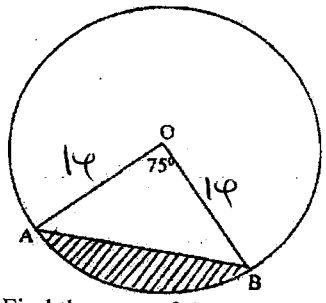
Absolute error $= 4.8 - 4.728$
$= 0.072$ B_1

% error $= \frac{\text{absolute error}}{\text{Real value}} \times 100$

$= \frac{0.072}{4.728} \times 100$

$= 1.52\%$ A_1

4 The figure below represents a circle a diameter 28 cm with a sector subtending an angle of 75^0 at the centre. **4 mks**



Find the area of the shaded segment to 4 significant figures (take π=3.142)

Area = Area of Sector OAB − Area of ΔOAB

$= \frac{75}{360} \times 3.142 \times 14 \times 14 - \frac{1}{2} \times 14 \times 14 \times \sin 75$ ✓M_1 ✓M_1

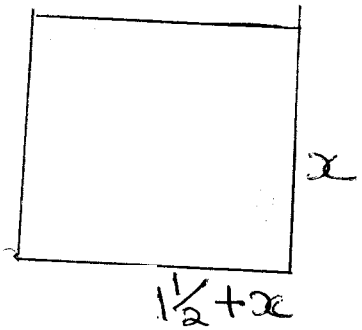
$= 128.2983 - 94.661$

$= 33.6373$ ✓B_1

$= 33.64$ (to 4 S.f) ✓A_1

5 The length of a rectangular mat is $1\frac{1}{2}$m longer than its width. Find the length of the mat if its area is $4\frac{1}{2}m^2$ **2 mks**

Let the width be x M



Area = L × W

$x \times (1\frac{1}{2} + x) = \frac{9}{2}$

$\frac{3}{2}x + x^2 = \frac{9}{2}$

$3x + 2x^2 = 9$

$2x^2 + 3x - 9 = 0$

✓M_1

$2x^2 + 6x - 3x - 9 = 0$

$2x(x+3) - 3(x+3) = 0$

$(2x - 3)(x+3) = 0$

$2x - 3 = 0$

$2x = 3$

$x = 3/2$.

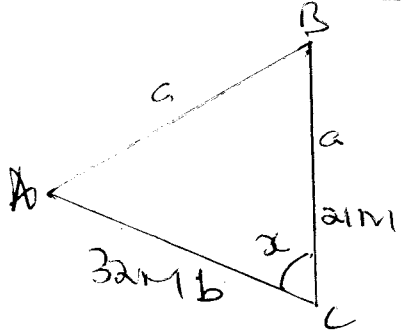
$x + 3 = 0$

$x = -3$ (discarded because no Measure is -ve)

Length $= 3/2 + 3/2 = \frac{3+3}{2}$

$= \frac{6}{2} = 3$ ✓A_1

6 Two sides of a triangular field are 21 m and 32 m long. Its area is 240m². The angle between two sides is obtuse. Determine this angle. **3 mks**



$\text{Area} = \frac{1}{2}ab\sin C$

$240 = \frac{1}{2} \times 32 \times 21 \times \sin x$

$480 = 672 \sin x$

$\sin x = \frac{480}{672} = 0.7143$ ✓B_1

$x = \sin^{-1} 0.7143$

$= 45.58°$ ✓B_1

Obtuse angle (2nd quadra

$x = 180 - 45.58$

$= 134.42°$ ✓A_1

7 Evaluate;

$$\frac{log5^5 - log5^4}{log4^{\frac{1}{5}} - log5^{\frac{1}{4}}}$$

Giving the answer to 4 significant figures. **2 mks**

$$\frac{\log 5^5 - \log 5^4}{\log 4^{\frac{1}{5}} - \log 5^{\frac{1}{4}}} = \frac{5\log 5 - 4\log 5}{\frac{1}{5}\log 4 - \frac{1}{4}\log 5} = \frac{3.4949 - 2.795}{0.1204 - 0.1747}$$ ✓M_1

$$= \frac{0.699}{-0.0543} = -12.87$$ ✓A_1

8 Solve for x in the equation

$2 \log_{10} x + \log_{10} 5 = 1 + 2\log_{10} 4$ **4 mks**

$2\log_{10} x + \log_{10} 5 = \log_{10} 10 + 2\log_{10} 4$ ✓M_1

$\log_{10}(x^2 \times 5) = \log_{10}(10 \times 4^2)$ ✓M_1

$\frac{5x^2}{5} = \frac{160}{5}$

$x^2 = 32$ ✓M_1

$x = \sqrt{32}$ or $x = 5.66$ ✓A_1

9 Sato withdrew some money from a bank. He spent $^3/_8$ of the money to pay for Njeri's school fees and $^2/_5$ to pay for Kigen's fees. If he remained with Ksh 12, 330, calculate the amount of money he paid for Kigen's school fees. **4 mks**

$\frac{3}{8}+\frac{2}{5}=\frac{15+16}{40}=\frac{31}{40}$

Rem $=\frac{40}{40}-\frac{31}{40}=\frac{9}{40}$ ✓B_1

$\therefore \frac{9}{40}=12330$

$\frac{40}{40}=\frac{40}{40}\times\frac{40}{9}\times 12330$

$=54,800$ ✓B_1

but Kigoli's fees is $^2/_5$

$\therefore \frac{2}{5}\times 54800 = 21,920$ ✓A_1

✓M_1

10 A minibus covered a distance of 180km at an average speed of 90km/hr. It travelled at a speed of 80km/hr for $^2/_3$ of its journey. At what speed did it travel the remaining part of the journey? **3 mks**

Time for the whole journey $=\frac{180}{90}=2$hrs

$^2/_3$ of journey $=\frac{2}{3}\times 180$

$=120$km covered at 80km/h.

Time it covered 80km/h $=\frac{120}{80}=1\frac{1}{2}$hrs

Remaining distance $=180-120$

✓B_1 $=60$km

Remaining time $=2$hrs $-1\frac{1}{2}$hrs

✓B_1 $=\frac{1}{2}$hr.

Speed $=60\div\frac{1}{2}$

$=60\times\frac{2}{1}$

$=120$km/h. ✓A_1

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