MARKING SCHEME MATHEMATICS PAPER 1

1. 22 + 14 = 36 = -3

 -12 12

16X -6 – 12

-96 -12 = -108 -108 = 4

 -27

72 ÷ -8 X 3

-9X 3 = -27

-3 – 4 = -7

2. II (17.5)2 – 52(10.5)2 = 616mm2

V= 6.16 X 250 = 1540CM3

Mass =V X D

= 1540 X 1.25

= 1925g

3.36=22 x 32

=54 = 2 x 33

=G.C.D =2 x 32 = 18

= L.C.D = 22 x 33 = 108

=108 – 18

=90

216 = 23 x 33

 = 23 x 3 = 24

4 

a2 =$√\left(4-3\right)$

a=1

Cos θ= ½

Tan θ = $√$ 3/1

5. School fees = ¼ x

Electricity & water = ¼ + ¾

=3/16 x

Transport = 1/9(x-1/4x +3/16x)

=1/16x

Remainder = x –(1/4x + 3/16x + 1/16x)

=1 /2 x

=1/2 x =3400 x 2

X=6800

6. SA=454R2 = 506

R= $√\left(506/π\right)$

= 9

Internal radius r=9-1.5

=7.5

V =4/3llr3 x ½

=2/3 x 3.142 x 7.53

=883.69

7. 3x2 – 2xy –y2

3x2 -3xy +xy – y2

3x9x-y) +y(x-y)

(3x+y)(x-y)

8.a

 

b. 3.9+/- 0.1

9.a)

22

b) 20 + 21

 2

20.5

10. 120% -------36000

100% \_\_\_\_ 100 x 36000

 120

=30,000

% profit = 3600 x 100

 30000

=12%

11. L1 =y= -x

L 2 =3x -4y =24

L3= x - 4

L2 y ≥ -2

L 2 ,3x -4y < 24

L 3 x ≥ -4

12. 3x2 -1-2x2 + x + 1

 (x + 1 (x + 1)

X2 + x

(x + 1 (x -1)

 x

 X -1

13. (a) 23 x 32 x 5

b) 2’x 5’=10

14. 2 log 4 + log 6 –log 1000

2(0.6021) + 0.7782 – 3

* 1. -3

1.0176

15. Cost of commission = 115 x 4800

 100

= 5520 US

In Ksh 5520 X 103.34 = 570436.80

=72200 x 103.34

117.20

=63679.30

Total inKsh =570436.80 + 63679.30

= 639116.10

16. (a+2b)2 –(2b-a)2

(a+2b)2 = a2 + 4ab + 4b2

(2b-a)2 = 4b2 – 4ab + a2

A2 + 4ab +4b2 – 4b2 – 4ab + a2

=8ab

17 a) 250x 14x2x2 = 14000

Net profit = 14000 – 6000 = 8000

b) 8000 x 25 = 200,000 = 190,000

c)Saving = 40/100 x 190,000 = 76,000

Remaining profit = 36/100 x 190,000 = 68400

Muthoka share

=2/9 x 68 400

=304800

d)475 000 x 34100 = 1500000

 95

19. speed of B = (x +12) km/h

Time = 350

 X + 12

Time = 350

 X

350 - 350 = 6

X x + 12 5

350 (x+12 ) – 350x = 6

X (x + 12) 5

X + 12x – 350 = 0

a=1, b=12, c= -3500

x = -12 ±$√($122 + 1400)

 2

=-131 0r 107

 2 2

X =53.5km/h

b) 350 = 5.34 hrs

 53.5 + 12

 = 5 hrs 20 min

Time taken by A = 5 hrs 20 min

 20 min

 5 hrs

Distance by A 5 x 53.5

 = 267.5km from Nairobi

1. a)48 = 21 + x

16 x

3x = 21 + x

2x =21

X = 10.5cm

b) Volume of bigger cone = 1/3 x 22/7 x 482 x 31.5 = 76032cm3

Volume of small cone = 1/3 x 22/7 x 164 x 10.5 = 2816cm3

Total volume = 73216cm3

c)



C.S.A of small = ll rl

=22/7 x 16x19.1376

=962.347 cm2

C.S.A of bigger cone = llRl

=22/7 x 48x 57.4129

=866.146cm

Total = 7698.799

Small circle = 22/7 x 162=804 4/7cm2

Bigger circles = 22/7 x 482 = 7241 1/7

Total =15744.513cm2

 -1

20 a)$\left(\begin{matrix}4&3\\3&2\end{matrix}\right)=-1\left(\begin{matrix}2&-3\\-3&4\end{matrix}\right)$=$\left(\begin{matrix}-2&3\\3&-4\end{matrix}\right)$

 $\left(\begin{matrix}a&b\\c&d\end{matrix}\right)=\left(\begin{matrix}-2&3\\3&-4\end{matrix}\right)\left(\begin{matrix}1&2\\3&4\end{matrix}\right)$

 $\left(\begin{matrix}a&b\\c&d\end{matrix}\right)$=$\left(\begin{matrix}7&8\\-9&-10\end{matrix}\right)$

b)$\left(\begin{matrix}2&1\\2&2\end{matrix}\right)$ $\left(\genfrac{}{}{0pt}{}{x}{y}\right)$ = $\left(\genfrac{}{}{0pt}{}{10}{14}\right)$

1/2$\left(\begin{matrix}2&-1\\-2&2\end{matrix}\right) \left(\begin{matrix}2&1\\2&2\end{matrix}\right)\left(\genfrac{}{}{0pt}{}{x}{y}\right) = 1/2 \left(\begin{matrix}2&-1\\-2&2\end{matrix}\right)\left(\genfrac{}{}{0pt}{}{10}{14}\right)$

$\left(\genfrac{}{}{0pt}{}{x}{y}\right)$ =$ 1/2\left(\genfrac{}{}{0pt}{}{6}{8}\right)$

X = 3 and y = 4

c) det = 1 -3 = -2

-1/2$\left(\begin{matrix}1&-1\\-3&1\end{matrix}\right)$ =$\left(\begin{matrix}-0.5&0.5\\1.5&-0.5\end{matrix}\right)$

X = 4

Y =3

1. a) Sin Q = x/8

sin 35 = x/8

x = 8 sin 35

=4.59

Sin 20 4.59

 Pb

PB=13.42

b) θ/360 llr2 -1/2 absin θ

70/360 x 22/7 x 182  sin 70

=39.11 – 30.07

= 9.04cm2

40/360 x 22/7 x 13.422 – ½ x 13.422 sin 40

= 62.89 – 57.88

= 5.01cm2

5.01 + 9.04

14.05cm2

c) ½ x 82 sin 70 x ½ 3.422  sin 40 – 14.05

=30.07 + 57.88 -14.05

=73.9cm2

1. (i) 90 – 50 = 40o

ii) 360 – 2(50)

=360 – 100

= 2600

iii) 40o

iv) 180 – 80o – 500

=50o

v) PQR = 40 + 90o

 = 130o

1. a (i) **OB** = **p** + **Qq**

ii)**AD** =3**q** –**p**

iii) **CB** = **p** -4**q**

b ) **Ax** =k(3**q**-**p**)

**OX**=r(**p**=**q**)

**Ox** =**p** +k (3**q**-**p**)

=**p** +3**q**k –k**p**

**Ox=rp=rq =P +–kp**

r=1 –k**3kq**

r=3k

3k=1 –k

4k=1

K=1/4

R=3/4

24.



B9i) 10.8 ± x 2 = 21.6

ii)S74O  E ±1

iii) NR =6.1X2 = 12.2

Area =1/2x12.2x16 sin 40

=62.74