GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

GAUTENG DEPARTMENT OF EDUCATION

PROVINCIAL EXAMINATION

2015

GRADE 9

MATHEMATICS

MEMORANDUM

8 pages

GAUTENG DEPARTMENT OF EDUCATION

PROVINCIAL EXAMINATION

MATHEMATICS

SECTION A

QUESTION 1

1.1	B	✓
1.2	D	✓
1.3	D	✓
1.4	C	✓
1.5	D	✓
1.6	D	✓
1.7	B	✓
1.8	C	✓
1.9	B	✓
1.10	C	✓

[10]

SECTION B

QUESTION 2

2.1 $b = 5$ ✓ (1)

2.2 R800 ✓ (1)

2.3 $3\sqrt{2}$ ✓ (1)

2.4 $(2x)^3 \times -2x^2$

$8x^3 \times -2x^2$ ✓

$-16x^5$ ✓ (2)

2.5 $P = A(1+i)^n$ ✓

$= 2000(1+0{,}06)^5$ ✓

$= R2676{,}45$ ✓ (3)

2.6 $I = \frac{Pnr}{100}$

$675 = \frac{2500 \times n \times 9}{100}$ ✓

$675 = 225n$ ✓

$n = \frac{675}{225}$

$n = 3$ ✓

It took her 3 years. (3)

2.7 $5 + 6 + 7 = 18$ ✓

The size $= \frac{7}{18} \times 180^0$ ✓

$= 70^0$ ✓ (3)

[14]

QUESTION 3

3.1 3.1.1

Figure	1	2	3	4
Number of Triangles	4	8	12✓	16✓

(2)

3.1.2 Add 4 to each term to get the next term. ✓ (1)

3.1.3 $T_n = 4 = 4(1)$

$T_n = 8 = 4(2)$

$T_n = 12 = 4(3)$

$T_n = 4n$ ✓ (1)

3.2 3.2.1 $3p^2q + 15pq^2 - 12pq$

$= 3pq$ ✓ $(p + 5q - 4)$ ✓ (2)

3.2.2 $3x(x-3) + 2(3-x)$

$= 3x(x-3) - 2(x-3)$ ✓✓

$= (x-3)(3x-2)$ ✓ (3)

3.2.3 $75x^3 - 12x$

$= 3x$ ✓ $(25x^2 - 4)$ ✓

$= 3x(5x-2)(5x+2)$ ✓ (3)

3.3 $= 2(3)^2 + 5(3) - 12$ ✓

$= 18 + 15 - 12$ ✓

$= 21$ ✓ (3)

[15]

QUESTION 4

4.1 Simplify.

4.1.1 $\dfrac{2x^3y^3}{2x^4}\times\dfrac{4xy^3}{6y}\times\dfrac{3x^2}{xy^3}$

$=\dfrac{y^3}{x}\times\dfrac{2xy^2}{3}\times\dfrac{3x}{y^3}$ ✓✓✓

$=2xy^2$ ✓

OR $\dfrac{6x^2y^5}{3xy^3}$ ✓✓✓ $=2xy^2$ ✓

OR $\dfrac{24x^6y^6}{12x^5y^4}$ ✓✓✓ $=2xy^2$ ✓

(4)

4.1.2 $\sqrt[3]{\dfrac{54x^6}{2x^3}}-\sqrt{\dfrac{8x^2y^3}{2y}}$

$=\sqrt[3]{27x^3}$ ✓ $-\sqrt{4x^2y^2}$ ✓

$=3x-2xy$ ✓

(3)

4.1.3 $\dfrac{y+4}{3}-\dfrac{3y+2}{4}$

$=\dfrac{4(y+4)-3(3y+2)}{12}$ ✓✓

$=\dfrac{4y+16-9y-6}{12}$ ✓

$=\dfrac{-5y+10}{12}$ ✓

(4)

4.1.4 $\dfrac{(x+3)(x-2)}{4-2x}$

$=\dfrac{(x+3)(x-2)}{-2(x-2)}$ ✓✓

$=-\dfrac{(x+3)}{2}$ ✓

(3)

4.1.5 $-3(x+2)+4x-3+2(2x-1)$

$=-3x-6$ ✓ $+4x-3+4x-2$ ✓

$=5x-11$ ✓

(3)

4.2.1 $3(x+1)=2x+3$
$3x+3=2x+3$ ✓
$3x-2x=3-3$ ✓
$x=0$ ✓ (3)

4.2.2 $\frac{2x+1}{3}=5-\frac{1}{2}x$
$\frac{2x+1}{3}\times 6=5\times 6-\frac{1}{2}x\times 6$ ✓
$2(2x+1)=30-3x$ ✓
$4x+2=30-3x$ ✓
$7x=28$ ✓
$x=4$ ✓ (5)

4.2.3 $2^{x+1}=16$
$2^{x+1}=2^4$ ✓
$x+1=4$ ✓
$x=3$ ✓ (3)

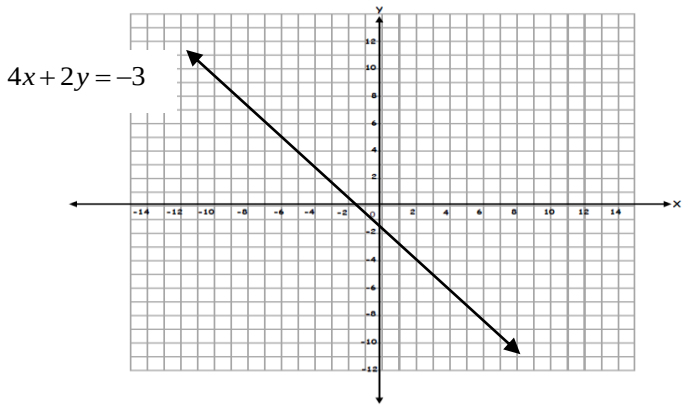
4.3 $5x=48-x$ ✓
$6x=48$ ✓
$x=8$ ✓ The number is 8. (3)
[31]

QUESTION 5

5.1 5.1.1 $4x+2(0)=-3$ ✓
$4x=-3$
$x=-\frac{3}{4}$
$(-\frac{3}{4};0)$ ✓ **OR** $(-0,75;0)$ (2)

5.1.2 $(0;-\frac{3}{2})$ ✓ **OR** $(0;-1,5)$ (1)

5.1.3



(2)

5.2 5.2.1 $m = \frac{\Delta y}{\Delta x} = \frac{2}{2}$ ✓ OR $m = \frac{2-0}{0-(-2)} = 1$ (2)

$= 1$ ✓

5.2.2 $y = x + 2$ ✓✓ (2)

[9]

QUESTION 6

6.1 6.1.1

$x = 36^0$ ✓ [angles opposite equal sides] ✓ (½)

$y = 90^0 - 36^0$ ✓ [sum of angles of a triangle] ✓ (½)

$y = 54^0$ ✓

(4)

6.1.2 In ΔCAB

$x = \hat{B}$ ✓ (½) [angles opposite equal sides] ✓ (½)

$2x = 180^0 - 80^0$ ✓(½) [sum of angles of a triangle] ✓ (½)

$x = 50^0$ ✓ (½)

$x = y + 25^0$ ✓ (½) [exterior angle of a triangle] ✓ (½)

$y = 50 - 25^0$ ✓ (½)

$y = 25^0$ ✓ (½)

(4)

6.2 $\hat{E} = \hat{G}$ ✓ (½) [alternate angles; EF∥HG] ✓ (½)

$\hat{F} = \hat{H}$ ✓ (½) [alternate angles; EF∥HG] ✓ (½)

OR

$\hat{O}_1 = \hat{O}_2$ vertical opposite angles

$\therefore \Delta EFO \equiv \Delta GHO$ ✓ (½) [AAS] ✓ (½)

$FO = OH$ ✓ (½) [given] ✓ (½)

(4)

6.3 $\frac{x}{17} = \frac{69}{23}$ ✓

$x = 17 \times 3 = 51$ ✓✓

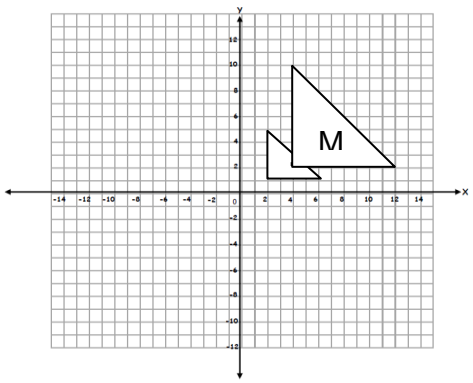
$\frac{y}{75} = \frac{23}{69}$ ✓

$3y = 75$

$y = 25$ ✓

(5)

6.4



✓✓✓ (1 *mark for each vertex*) (3)

[20]

QUESTION 7

7.1.1 $\text{Area } \Delta\text{DEF} = \frac{1}{2} \times 8\,cm \times 6\,cm$ ✓

$= 24\,cm^2$ ✓ (2)

7.1.2 $V = Area\ of\ base \times height$

$= 24\,cm^2 \times 15\,cm$ ✓

$= 360\,cm^3$ ✓ (2)

7.2.1 $\text{Perimeter} = 5 \times 6\,cm = 30\,cm$ ✓ (1)

7.2.2 $OA^2 = OB^2 - AB^2$

$OA^2 = (5\,cm)^2 - (3\,cm)^2$ ✓

$OA^2 = 25\,cm^2 - 9\,cm^2$

$OA^2 = 16\,cm^2$ ✓

$OA = 4\,cm$ ✓ (3)

7.2.3 $A = 10\ (Area\ of\ \Delta AOB)$ ✓

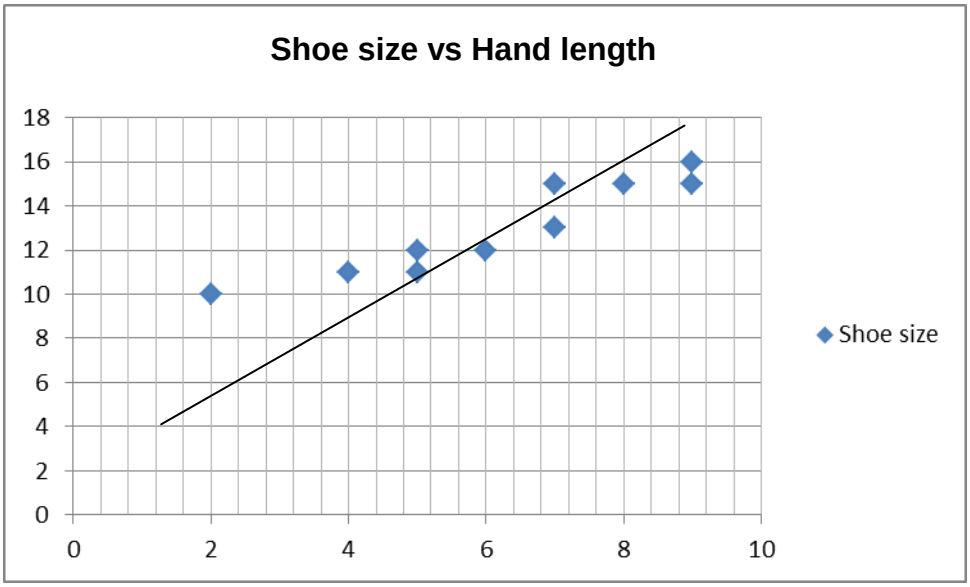
$= 10\ (\frac{1}{2} \times 3\,cm \times 4\,cm)$ ✓

$= 60\,cm^2$ ✓ (3)

[11]

QUESTION 8

8.1



✓✓✓✓ (4)

8.2 For line of best fit see the graph. ✓ (1)

8.3 The length of the hand is in direct proportion with the shoe size. ✓ (1)

8.4 Mode = 15 ✓ (1)

8.5 Calculate the mean for the shoe size.

$$\text{Mean} = \frac{12+13+10+15+12+15+11+16+15+11}{10} \checkmark$$

$= 13$ ✓ (2)

8.6 Range = 9 – 2 = 7 ✓ (1)

[10]

TOTAL: 120