SYDNEY GIRLS H.S.

Name _____ [9M3 – 2009]

Year 9 – Coordinate Geometry TEST

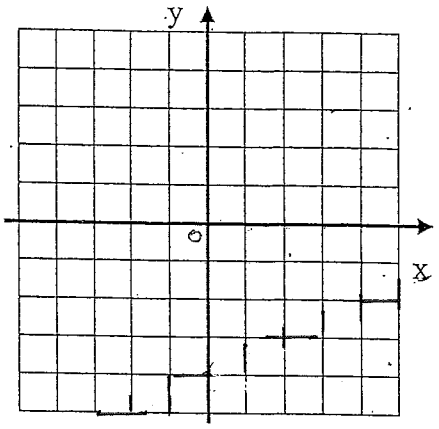
- Time allowed: 35 minutes.
- Write all answers on the question paper.
- Show all necessary working, including writing formulas.

Question 1.
Find the midpoint of the interval with the endpoints $(-3, -2)$ and $(5, 1)$ (3 marks)

Question 2.
Find the length of the interval between the points $(-4, 4)$ and $(3, -1)$ (3 marks)

Question 3.
Find the gradient of the line which passes through the points $(-2, 3)$ and $(4, 12)$ (3 marks)

Question 4.
On the number plane below, draw the line $x-2y-8=0$ (2 marks)



Question 5.
Find the equation of the straight line which passes through the point (–1, 5), with gradient m = –3.
(3 marks)

Question 6.
Find the equation of the straight line which passes through the two points (3, 3) and (2, 5)
(4 marks)

Question 7.
Write each of the following equations in the general form: (3 marks)

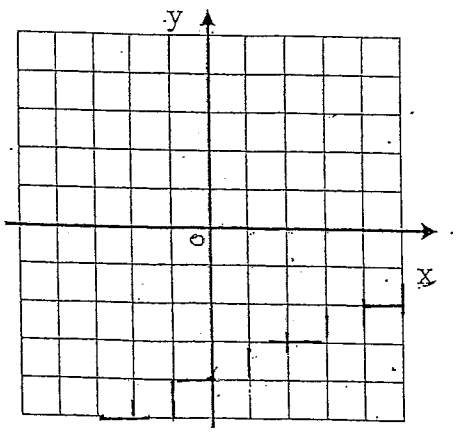
a) $3y-2=3x$

b) $y=-\frac{1}{2}x+2$

Question 8.
What is the equation of the line parallel to $y = 3x - 2$, which passes through the point (5, 6)?
(3 marks)

Question 9
Line p has the equation: $y = 4x + 6$. Line q is perpendicular to p. Line q passes through the point (1, 2). What is the equation of line q?
(3 marks)

Question 10
On the number plane below, graph the following inequality $(x, y) : x \leq 1 \cap y > x - 3$ (3 marks)



End of Test ☺

Name _____

Year 9 – Coordinate Geometry TEST [9M3 – 2009]

Excellent work! I.B.

28/30 93⅓% (Average: 88%)

- Time allowed: 35 minutes.
- Write all answers on the question paper.
- Show all necessary working, including writing formulas.

Question 1.
Find the midpoint of the interval with the endpoints (–3, –2) and (5, 1) (3 marks)

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

$= \left(\frac{-3+5}{2}, \frac{-2+1}{2}\right)$

$= \frac{2}{2}, \frac{-1}{2}$

$= \left(1, -\frac{1}{2}\right)$ ✓

3

Question 2.
Find the length of the interval between the points (–4, 4) and (3, –1) (3 marks)

$d = \sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$

$= \sqrt{(-4-3)^2 + (4--1)^2}$

$= \sqrt{(-7)^2 + (5)^2}$

$= \sqrt{49+25}$

$= \sqrt{74}$ ✓ units

3

Question 3.
Find the gradient of the line which passes through the points (–2, 3) and (4, 12) (3 marks)

$m = \frac{y-y_1}{x-x_1}$

$= \frac{12-3}{4--2}$

$= \frac{9}{6}$

$= 1\frac{1}{2}$ ✓

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

$\left(\frac{y-y_1}{x-x_1} = m\right)$

3

Question 4.
On the number plane below, draw the line $x-2y-8=0$ (2 marks)

$x-2y-8=0$

$x-8 = 2y$

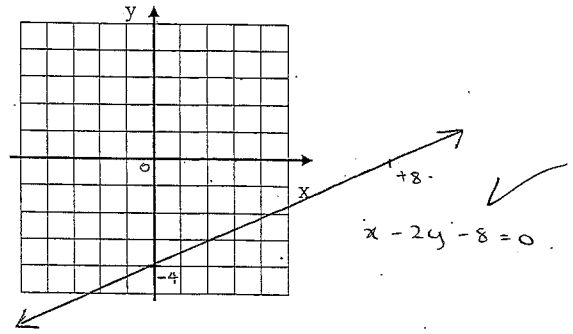
$\frac{x-8}{2} = y$

when:

$x=0,\ y=-4$

$y=0,\ x=8$

2



✓ $x-2y-8=0$

$\frac{0}{2} = 0$

$2(0)-8 = 0$

Question 5.
Find the equation of the straight line which passes through the point (–1, 5), with gradient m = –3. (3 marks)

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

$y-5 = -3(x--1)$

$y-5 = -3x-3$

$y = -3x-3+5$

3

∴ equation $y = -3x+2$ ✓

Question 6.
Find the equation of the straight line which passes through the two points (3, 3) and (2, 5) (4 marks)

$(y=mx+b)$

$m = \frac{y-y_1}{x-x_1}$

$= \frac{5-3}{2-3}$

$= \frac{2}{-1}$

$= -2.$

4

∴ gradient $= -2$

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

$y-3 = -2(x-3)$

$y-3 = -2x+6$

$y = -2x+6+3$

∴ equation of line $y = -2x+9$ ✓

Question 7.
Write each of the following equations in the general form: $ax+by+c=0$ (3 marks)

a) $3y-2=3x$

$3x-3y+2=0$ ✓

b) $y=-\frac{1}{2}x+2$

$\frac{1}{2}x+y-2=0$ ×

$\Rightarrow ?\ x+2y-4=0$

2

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Question 8.

What is the equation of the line parallel to $y = 3x - 2$, which passes through the point (5, 6)? (3 marks)

parallel = $(m_1 = m_2)$

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

$y - 6 = 3(x - 5)$

$y - 6 = 3x - 15$

$y = 3x - 15 + 6$

3

∴ equation: $y = 3x - 9$ ✓

Question 9

Line p has the equation: $y = -4x + 6$. Line q is perpendicular to p. Line q passes through the point (1, 2). What is the equation of line q? (3 marks)

perpendicular = $\left(m_1 = \frac{-1}{m_2}\right)$

∴ $m_1 = -4$.

$m_2 = \frac{1}{4}$.

∴ gradient of 'q' = $\frac{1}{4}$

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

$y - 2 = \frac{1}{4}(x - 1)$.

$y - 2 = \frac{x}{4} - \frac{1}{4}$

$y = \frac{x}{4} - \frac{1}{4} + 2$

3

∴ equation of 'q': $y = \frac{x}{4} + 1\frac{3}{4}$ ✓

Question 10

On the number plane below, graph the following inequality $(x, y): x \leq 1 \cap y > x - 3$ (3 marks)

$x \leq 1$

$(x = 1)$

$y = x - 3$.

intersection

when: (Test 0,0)

$x = 0, y = -3$

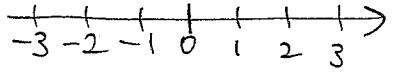
$x = 3, y = 0$.

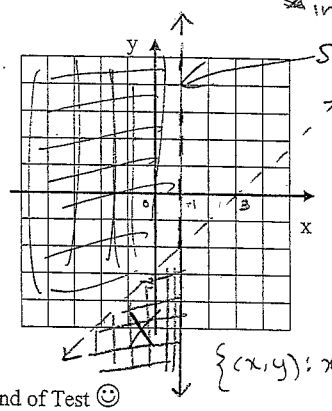
$y > x - 3$

$0 > 0 - 3$.

$0 > -3$

True ∴ (FALSE) ~~X~~ (0, 0) doesn't lie in the region.





solid line

$\{(x, y): x \leq 1 \cap y > x - 3\}$

2

End of Test ☺

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