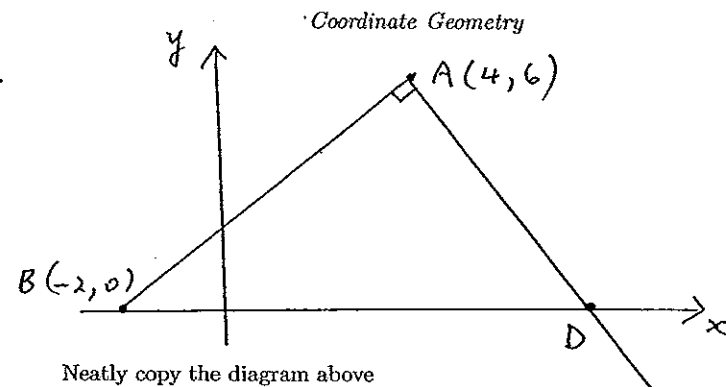


1. If $A = (2, -3)$ and $B(6, 1)$ find
 - (a) The mid point of the interval joining A and B .
 - (b) The gradient of line AB .
 - (c) The distance between A and B .
2. Write down the gradient and y -intercept of the line $y = -3x + 7$
3. By making y the subject of the equation find the gradient of the line $2x + 3y + 6 = 0$
4. On separate axes sketch the straight lines
 - (a) $y = -4$
 - (b) $y = 2x - 4$
5. Find the equation of the line with gradient of -2 and y -intercept of 3 .
6. Find the equation of the line through $(2, -4)$ with gradient of $\frac{1}{2}$.
7. Find the gradient of the line which passes through $A(2, -1)$ and $B(6, 2)$. Hence find the equation of the line AB .
8. What are the coordinates of the point where the line $2x - 3y = 12$ cuts the x axis?
9. Find the equation of the line through $(0, -4)$ which is parallel to the line $y = -2x + 4$.
10. What is the gradient of a line which is perpendicular to $y = \frac{2}{3}x + 4$.

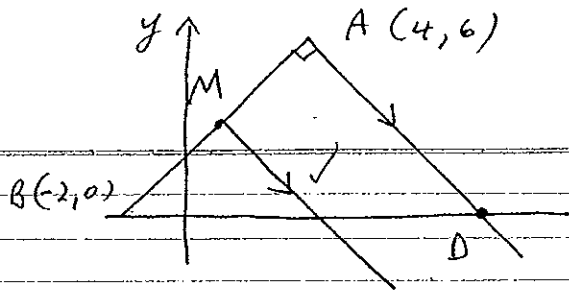
please turn over



Neatly copy the diagram above

- (a) Find the gradient of line AB .
- (b) Find the gradient of AD .
- (c) Show the equation of line AD is $x + y - 10 = 0$.
- (d) Find the coordinates of D where AD cuts the x axis.
- (e) Hence, find the area of triangle ABD .
- (f) What is the equation of the line through A which is parallel to the y axis?
- (g) On your diagram draw the line through the mid point M of interval AB which is parallel to AD . Find the equation of this line.

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$$(a) \quad m(AB) = \frac{6-0}{4-(-2)} = 1 \quad \checkmark$$

$$(b) \quad m(AD) = -1 \quad \checkmark$$

(c) Eqn of AD is $y - y_1 = m(x - x_1)$

$$y - 6 = -1(x - 4) \quad \checkmark$$

$$y - 6 = -x + 4 \quad \checkmark$$

$$x - y - 10 = 0$$

(d) Cuts the x axis where $y = 0$

$$x - 0 - 10 = 0$$

$$x = 10 \quad \checkmark$$

$$D = (10, 0) \quad \checkmark$$

(e) Area = $\frac{1}{2} b h$

$$= \frac{1}{2} \times 12 \times 6 = 36 \text{ units}^2 \quad \checkmark$$

(f) Eqn is $x = 4 \quad \checkmark$

(g) $M = \left(\frac{4+(-2)}{2}, \frac{6+0}{2} \right) = (1, 3) \quad \checkmark$

(h) Eqn of line through M \parallel AD is

$$y - 3 = -1(x - 1) \quad \checkmark$$

$$y - 3 = -x + 1 \quad \checkmark$$

$$x + y - 4 = 0 \quad \checkmark$$

SOLUTIONS TO CO-ORDINATE GEOMETRY TEST.

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

$$= \left(\frac{2+6}{2}, \frac{-3+1}{2} \right)$$

$$= (4, -1) \quad \checkmark \checkmark$$

(b) $m = \frac{y_2 - y_1}{x_2 - x_1}$

$$= \frac{1+3}{6-2}$$

$$= \frac{4}{4} \quad \checkmark \checkmark$$

$$= 1 \quad \checkmark \checkmark$$

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

$$= \sqrt{(6-2)^2 + (1-(-3))^2} \quad \checkmark \checkmark$$

$$= \sqrt{16 + 16} \quad \checkmark \checkmark$$

$$= \sqrt{32} \text{ or } 4\sqrt{2}$$

2. $y = -3x + 7$

gradient = -3 and y-int = 7 $\checkmark \checkmark$

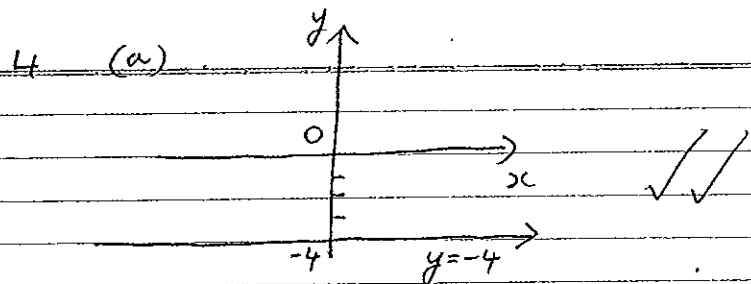
3. $2x + 3y + 6 = 0$

$$3y = -2x - 6$$

$$y = -\frac{2}{3}x - 2$$

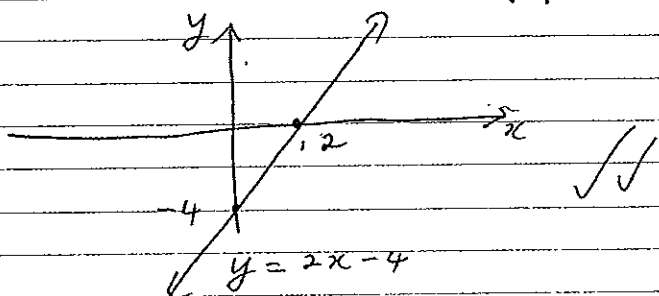
gradient = $-\frac{2}{3} \quad \checkmark \checkmark$

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(b) $y = 2x - 4$

x	0	1	2
y	-4	-2	0



5. Equ is $y = mx + b$
 $y = -2x + 3$ ✓✓

6. Equ is $y - y_1 = m(x - x_1)$
 $y + 4 = \frac{1}{2}(x - 2)$
 x2: $2y + 8 = 1(x - 2)$ ✓✓
 $2y + 8 = x - 2$
 $0 = x - 2y - 10$

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7 $m = \frac{2 - -1}{6 - 2}$
 $= \frac{3}{4}$ ✓✓

Equ of line AB is
 $y - y_1 = m(x - x_1)$

x4: $y - 2 = \frac{3}{4}(x - 6)$

$4y - 8 = 3x - 18$ ✓✓
 $0 = 3x - 4y - 10$

8 $2x - 3y = 12$

Cuts the x axis when $y = 0$

$2x = 12$
 $x = 6$ ✓✓

Required point is $(6, 0)$.

9. Equ of the line is

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

$y + 4 = -2(x - 0)$ ✓✓

$y + 4 = -2x$

$2x + y + 4 = 0$ ✓✓

10. The perpendicular line has gradient of $-\frac{3}{2}$

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