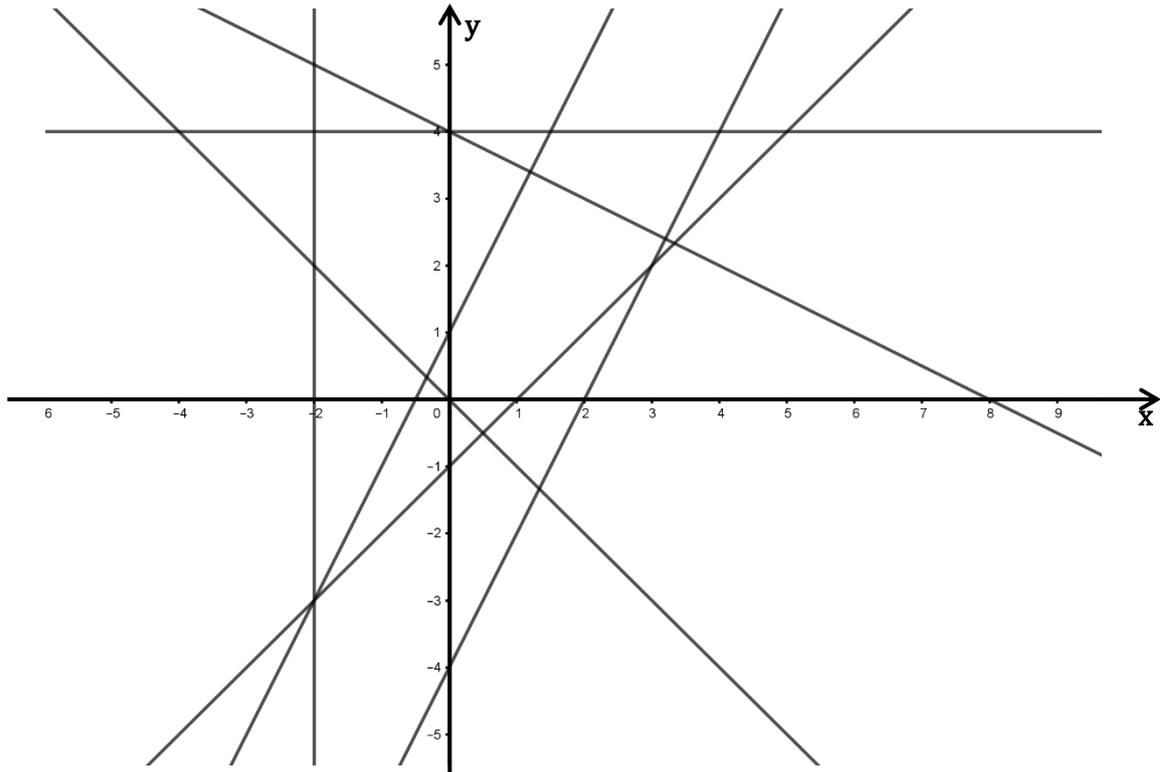


Equations of Straight Lines Challenge



1.
 - i) Find the x -intercept and the y -intercept for each line.
 - ii) Hence find the equation of each line in the form $y = mx + c$
 - iii) Identify the pairs of lines which are parallel to each other.
 - iv) Identify the pairs of lines which are perpendicular to each other.

2. Use the information below to find the equation of each line in the form $y = mx + c$
 - a) gradient = 3, y -intercept $(0, -5)$
 - b) gradient = -1 , passes through $(3, 8)$
 - c) gradient = 2, x -intercept $(-3, 0)$
 - d) passes through $(3, -4)$ and $(5, 0)$
 - e) passes through $(-7, -6)$ and $(-3, 4)$

3. Does the line $y = 3x - 7$ pass through the point $(6, 11)$? Explain your answer.

4. Does the line $y = 18 - 5x$ pass through the point $(4, -4)$? Explain your answer.

5. Find the gradient, y -intercept and x -intercept for each graph:
 - a) $y = 4x - 8$
 - b) $4y = 12x + 2$
 - c) $5x + 2y = 8$
 - d) $3x - 6y + 9 = 0$

6. Decide whether each statement is “always true”, “always false” or “sometimes true” explaining your decision in each case:

A: If two lines have different gradients they must intersect.

B: If a line intersects the y-axis at $(0,-3)$ it intersects the *positive* x axis.

C: If a line has a gradient of 1 it makes an angle of 45° with the x-axis.

D: If a line cuts the positive x-axis and the positive y-axis it has a negative gradient.

E: The line $x=4$ has a gradient of zero.