

The Straight Line 1

- Find the gradients of the lines between the following sets of points :
 - $A(2,8)$ and $B(-4,10)$
 - $P(-3,-6)$ and $Q(-1,2)$.
- The points E and F have coordinates $(2,-5)$ and $(-4, a)$ respectively. Given that the gradient of the line EF is $\frac{2}{3}$, find the value of a .
- If the points $(3, 2)$, $(-1, 0)$ and $(4, k)$ are collinear, find k .
- Find the equations of the lines specified as follows :
 - Passing through the point $P(2,-3)$ with gradient 4.
 - Passing through the points $A(-1,1)$ and $B(3,-1)$.
 - Passing through $(4,-5)$ and *parallel* to the line with equation $3x + 2y = 8$.
- What angle does the line with equation $5y + 3x - 12 = 0$ make with the positive direction of the x-axis?
- Show that the triangle with vertices $F(-4,6)$, $G(8,2)$ and $H(3,7)$ is isosceles.
- Triangle ABC has vertices $(2,6)$, $(-7,4)$ and $(4,-8)$ respectively.
 - Find the equation of the *median* from B to AC.
 - Find the equation of the *altitude* from A to BC.
- Triangle PQR has vertices $(2,3)$, $(-3,-2)$ and $(3,0)$ respectively.
 - Find the equations of the *perpendicular bisectors* of sides RQ and PR.
 - Find the coordinates of the point T, the point of intersection of these two bisectors.
 - Show that P, T and Q are collinear.
- ABCD is a parallelogram whose diagonals intersect at E. If A, B and E are the points $(-1,0)$, $(3,-2)$ and $(1,4)$ respectively, find the equation of DC.