10.   Gradients and the Straight Line

Finding Equations

1.   In the diagram,   A is the point (-1, -7)
and B is the point (4, 3).

   a)   Find the gradient of the line AB.   1 KU

   b)   AB cuts the y-axis at the point (0, -5).
Write down the equation of the line AB   1 KU

   c)   The point $(3k, k)$ lies on AB
Find the value of k.   2 RE
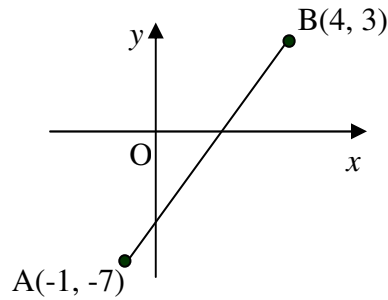
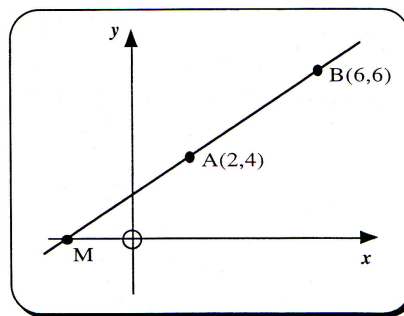2.   A is the point (a^2, a)

   T is the point (t^2, t) $a \neq t$

   Find the gradient of the line AT

   Give your answer in its simplest form.   3 KU

3.   The straight line through the points
A(2, 4) and B(6, 6) is shown
in the diagram.

   The point M is where the line AB
cuts the x-axis.

   a)   Find the equation of the straight
line AB.   4 KU

   b)   Use this equation to find the
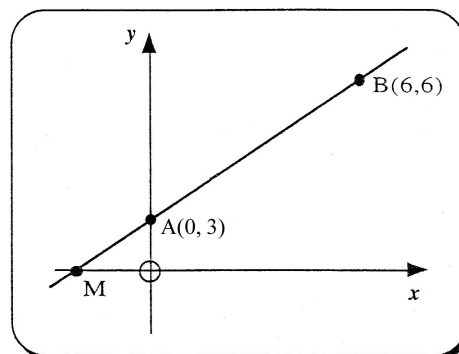coordinates of the point M.   2 RE

4.   The straight line through the points
A(0, 3) and B(6, 6) is shown
in the diagram.
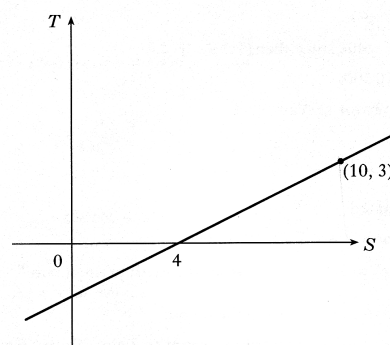
   The point M is where the line AB
cuts the x-axis.

   a)   Find the equation of the straight
line AB.   4 KU

   b)   Use this equation to find the
coordinates of the point M.   2 RE
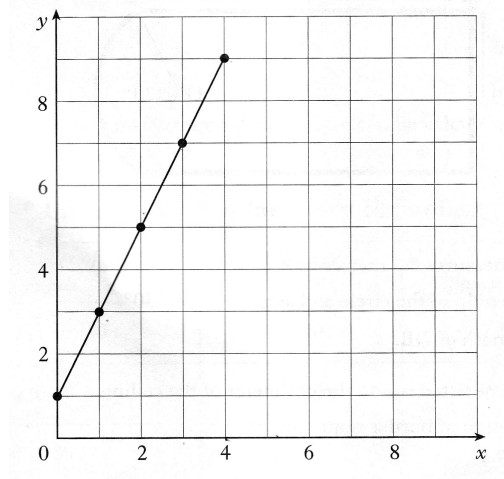
5.   Find the equation of the given

   straight line in terms of S and T.   4 KU

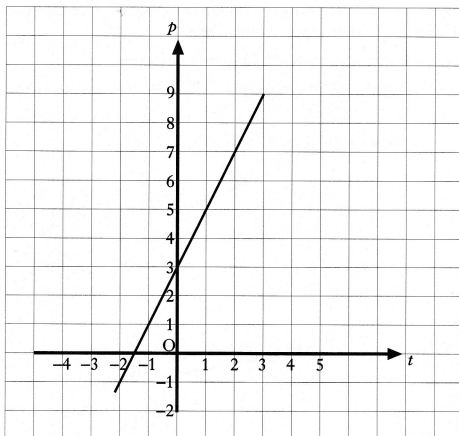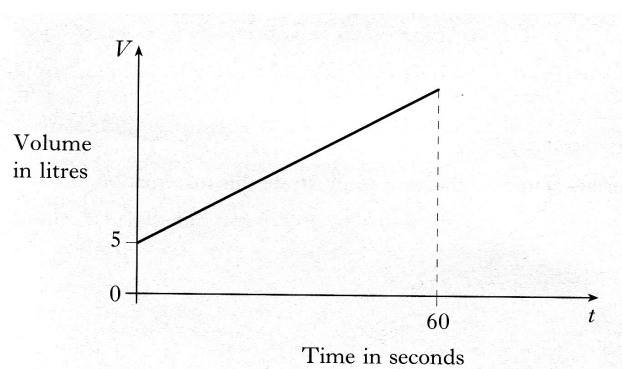6.   Find the equation of the straight line.   3 KU

7.   Find the equation of the
       straight line in terms
       of p and t.   4 KU

8.   The tank of a car contains 5 litres of petrol.

       The graph below shows how the volume of petrol in this tank changes
       as a further 45 litres of petrol is pumped in at a steady rate for 60 seconds.
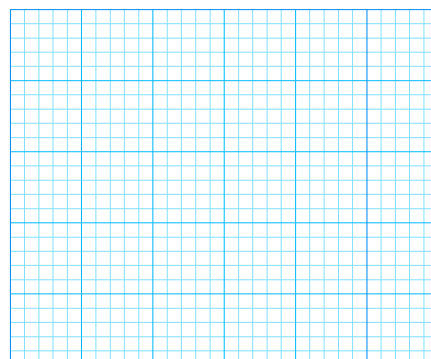
       Find the equation of the straight line in terms of V and t.   4 KU

9.   A tank contains 10 litres of water.

       A further 30 litres of water is poured into
       the tank at a steady rate of 5 litres per minute.

       a)   On the 2mm square ruled graph paper
             provided, draw a graph of the volume,
             V litres, of water in the tank against the
             time, t minutes.   4 KU

       b)   Write down an equation connecting V and t.   2 KU

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