Revision Sheet: The Line   6th Year OL Maths   Due Date:

Q1.   (Chap 18 Pg 548)

A(0,0), B (12,5) C(17,-7) and D(5,-12) are the vertices of a rhombus ABCD:
(i) Find the length of the side [AB].   Ans: 13   (ii) Find the length of [AC].   Ans: $\sqrt{338}$
(iii) Investigate if |BD| = |AC| Ans: Yes

Q2.   (Chap 18 Pg 550)
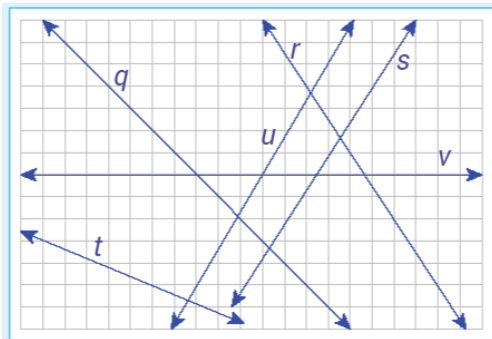
   (i)   A(11,-2) and C(-3,14) are two points. Find the midpoint of [AC]   Ans: (4,6)
   (ii)   F(6,7) and G(-1,-4) are two points. Find the co-ordinates of H if G is the midpoint
                of [FH].   (HINT: draw a diagram of the information)   Ans: B=(-8,-15)

Q3.   (Chap 18 Pg 552/553)

   (i)   Find the slope of the line containing the points P(2,-4) and (0,0)   Ans: m = -2
   (ii)   Find the slope of each of the line segments q, r, s, t, u, v from the diagram.

   (iii)   The line g has a slope of $\frac{5}{8}$. Write down the slope of h, if $g \perp h$.
   (iv)   The line a has a slope of 4. Write down the slope of b, if $a \parallel b$.

Q4.   (Chap 18 Pg 555/556/560)
a) (i) Find the equation of the line, which passes through the points (-2,4) and has a slope of
      -3. Write your answer in the form ax + by + c = 0.   Ans: $3x + y + 2 = 0$
      (ii) Investigate if the point (-1, 1) in on this line   Ans: Yes.
b) Find the equation of the line k, which passes through the points (-3, -1) and (6,5) and write
     your answer in the form ax + by + c = 0.   Ans: $2x - 3y + 3 = 0$

Q5.   (Chap 18 Pg 553/564)
a) Given the lines L:$2x + 5y - 3 = 0$ and K:$5x - 2y + 4 = 0$, investigate if L ⊥ K. Ans: Yes
b) The equation of the line S, is $3x - 4y + 8 = 0$.
    (i) Find the equation of the line which passes through the point (4, 2) and is parallel to S.
    (ii) Find the equation of the line which passes thorough the point (4, 2) and is
         perpendicular to S.   Ans: (i) 3x – 4y – 4 = 0 (ii) 4x + 3y – 22 = 0

Q6:

a) Using the same axis and scales, sketch the following lines:
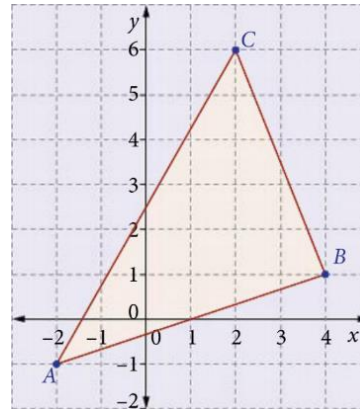
   K: y = 1,   S: $3x + 4y = 0$ T: $x = -3$

Q7:

a) Find the area of a triangle PQR, where P (0, 0), Q (1,3) and R (-3,3).   Ans: 6 sq.units

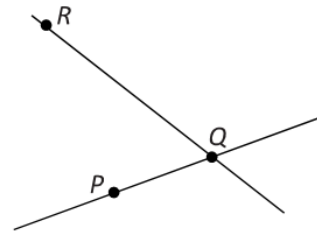b) Find the area of the following triangle:

   Ans: 17 sq.units

Past Exam Questions:

Q8. 2019 Paper 2 Q2

The diagram shows the line PQ and the line QR.
The co-ordinates of the points are P(4, 2), Q(8, 5) and R(2, 11).

(a)   Find the slope of PQ.   Ans: $\frac{3}{4}$

(b)   Find the equation of the line PQ.
      Give your answer in the form $ax + by + c = 0$, where $a, b, c \in \mathbb{Z}$.   Ans: 3x – 4y – 4 = 0

(c)   Write down the slope of any line perpendicular to PQ.   Ans: $-\frac{4}{3}$
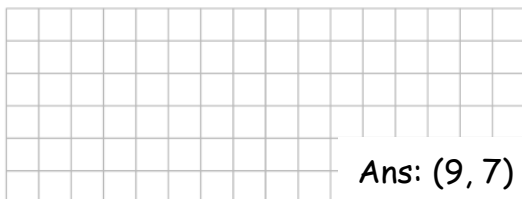
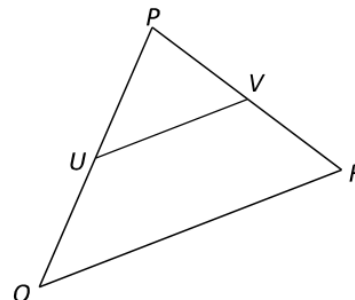**(d)**   Find the area of the triangle PQR.   Ans: 21 square units

Q9. 2018 Paper 2 Q2

The points P(7, 10), Q(1, 2) and R(11, 4) are the vertices of the triangle shown.
The point U(4, 6) is the midpoint of [PQ] and the point V is the midpoint of [PR].

(a)   Find the co-ordinates of V.

   Ans: (9, 7)

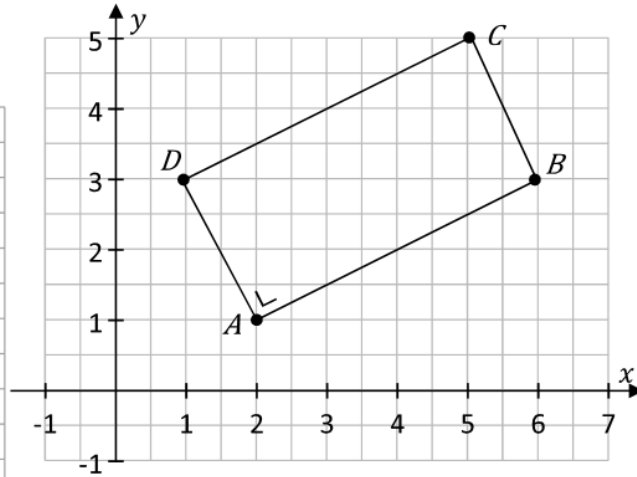**(b)**   Show, by using slopes, that UV is parallel to QR.

(c)   Find the area of the triangle PQR.   Ans: 34 square units

(a) The points $A(2,1)$, $B(6,3)$, $C(5,5)$, and $D(1,3)$ are the vertices of the rectangle $ABCD$ as shown.

(i) Show that $|AD| = \sqrt{5}$ units.

(ii) Find, in square units, the area of the rectangle $ABCD$.   Ans: 10 square units

(b) Find the equation of the line BC.
Give your answer in the form $ax + by + c = 0$, where $a, b,$ and $c \in \mathbb{Z}$.   Ans: 2x + y – 15 = 0

Q11. 2016 Paper 2 Q4

(a) The line l contains the points $A(4, 5)$ and $B(2, 0)$. Find the equation of l.
Give your answer in the form $ax + by + c = 0$ where $a, b,$ and $c \in \mathbb{Z}$.   Ans: 5x – 2y – 10 = 0

(b) Draw the line k: $x + 2y = 8$ on the axes below.
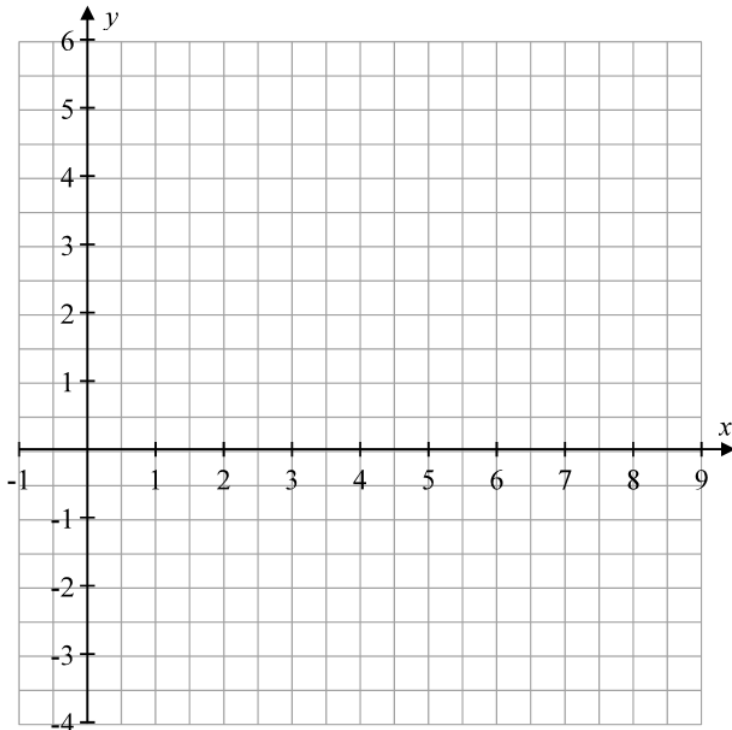
(c) Use a graphic, numeric or algebraic method to find the co-ordinates of $l \cap k$.   Ans: $(3, {}^5/_2)$