6. If the line 2x + y = k passes through the point which divides the line segment joining the points (1, 1) and (2, 4) in the ratio 3 : 2, then k equals :

[AIEEE 2012]

A ray of light along $x + \sqrt{3}y = \sqrt{3}$ gets reflected upon reaching x-axis, the equation of the reflected ray is :

[JEE MAIN 2013]

8. A light ray emerging from the point source placed at P(1, 3) is reflected at a point Q in the axis of *x*. If the reflected ray passes through the point R(6, 7), then the abscissa of Q is :

[JEE-MAIN 2013]

(1) 3   (2) $\dfrac{7}{2}$ (3) 1   (4) $\dfrac{5}{2}$

9. If the three lines $x-3y = p$, $ax + 2y = q$ and $ax + y = r$ form a right – angled triangle then:

[JEE-MAIN 2013]

(1) $a^2 - 6a - 12 = 0$ (2) $a^2 - 9a + 12 = 0$
(3) $a^2 - 9a + 18 = 0$ (4) $a^2 - 6a - 18 = 0$

10. If the x-intercept of some line L is double as that of the line, 3x + 4y = 12 and the y-intercept of L is half as that of the same line, then the slope of L is :-
(1) –3   (2) –3/2   (3) –3/8   (4) –3/16

[JEE-MAIN 2013]

11. If the extremities of the base of an isoscelestriangle are the points (2a, 0) and (0, a) and the equation of one of the sides is x = 2a, then the area of the triangle, in square units, is :

[JEE-MAIN 2013]

(1) $\dfrac{5}{2}a^2$ (2) $\dfrac{5}{4}a^2$ (3) $\dfrac{25a^2}{4}$ (4) $5a^2$

13. If the image of point P(2, 3) in a line L is Q (4, 5) then, the image of point R (0, 0) in the same line is :

[JEE-MAIN Online 2013]

(1) (4, 5)   (2) (2, 2)   (3) (3, 4)   (4) (7, 7)

14. Let a, b, c and d be non-zero numbers. If the point of intersection of the lines 4ax + 2ay + c = 0 and 5bx + 2by + d = 0 lies in the fourth quadrant and is equidistant from the two axes then :

[JEE(Main)-2014]

(1) 2bc – 3ad = 0   (2) 2bc + 3ad = 0
(3) 3bc – 2ad = 0   (4) 3bc + 2ad = 0

15. Let PS be the median of the triangle with vertices P (2, 2), Q (6, –1) and R (7, 3). The equation of the line passing through (1, –1) and parallel to PS is :

[JEE(Main)-2014]

(1) 4x – 7y – 11 = 0   (2) 2x + 9y + 7 = 0
(3) 4x + 7y + 3 = 0   (4) 2x – 9y – 11 = 0