新东方在线

GRE数学

3.1 直线方程

M A K E I T E A S Y

3.1.1 直线方程定义

Equation of a line: y = kx + b where k is the slope, b is the y-intercept.
Slope/Gradient/Average rate of change:

$$k = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$$

The constant k tells for each unit change in x how much y increases or decreases.
The constant b represents some starting value for y or some initial condition.

3.1.1 直线方程定义

1. The lines intersect in one point. In this case, the system has a unique solution.

两条线相交，唯一解，斜率不相等

*两条直线垂直（perpendicular），一个交点，一个解，斜率乘积为-1（product of their slope is -1）

3.1.1 直线方程定义

2. The lines are parallel. In this case, the system has no solution.

两条线平行，没有解，斜率相等，常数项不相等

3.1.1 直线方程定义

3. The lines are identical. In this case, every point on the line is a solution, and so the system has infinitely many solutions.

两条线重合，无数个解，斜率相等且常数项相等

3.1.2 练习

1. A total of 1,500 boxes are stored in four warehouses. The number of boxes stored in the individual warehouses are x,y,z and w, respectively, where w=2x and z=2y.

Quantity A: x+y

Quantity B: 500

2. If x is 4 more than half of y and if y is 10 more than half of x, what is the value of x?

3. The system of equations has how many solutions?

$$\begin{cases} 3x - 6y = 9 \\ 2y - x - 3 = 0 \end{cases}$$

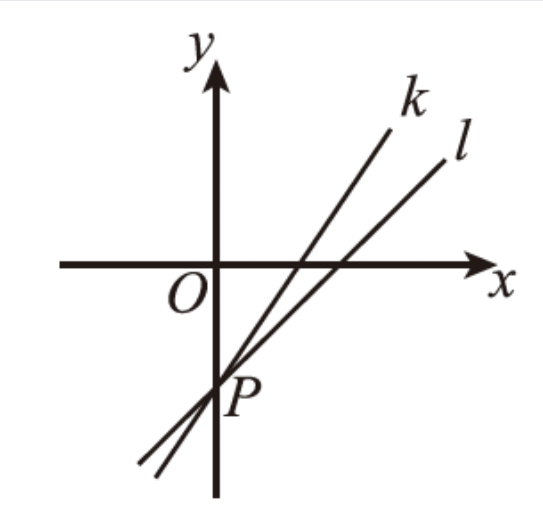
4. In the xy-plane, the equation of line k is $3x-2y=0$.

Quantity A: The x-intercept of line k

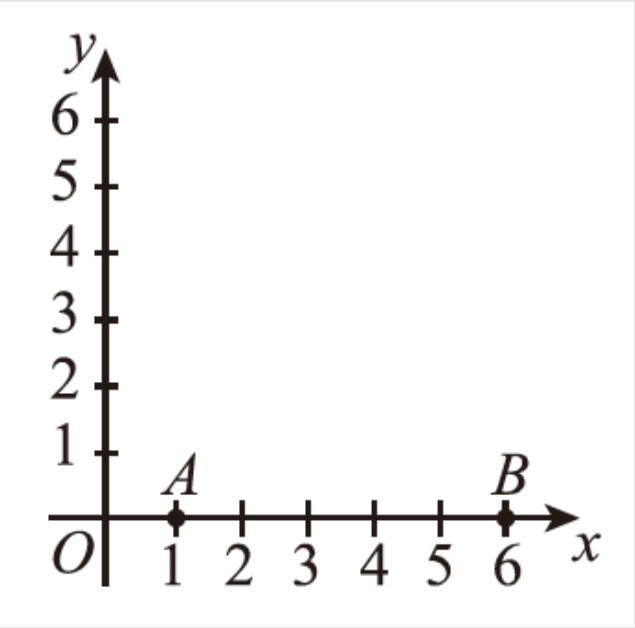
Quantity B: The y-intercept of line k

5.
Quantity A: The slope of line k

Quantity B: The slope of line l



6. Points A and B are shown in the xy-plane below. Point C (not shown) is above the x-axis so that the area of triangle ABC is 10. Which of the following could be the coordinates of C? Indicate all such coordinates.



7. In the xy-plane, line k is a line that does not pass through the origin.
Which of the following statements individually provide(s) sufficient additional information to determine whether the slope of line k is negative?

Indicate all such statements.

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Thanks

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