

### 6.9 Classwork: Applications of systems of linear equations

HSG.REI.C.6

1. Two values,  $x$  and  $y$ , have a total of 12. The larger,  $y$ , is 3 more than twice  $x$ . Write a system of linear equations to represent this situation, then graph them to solve.

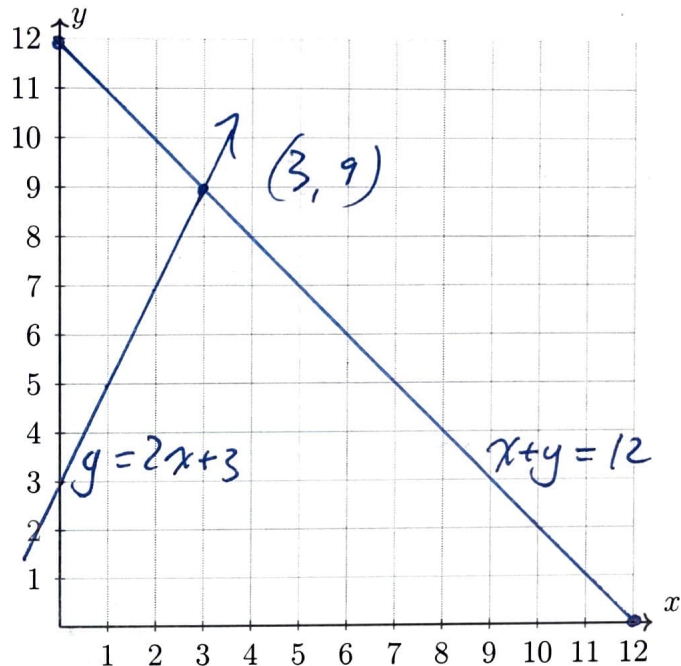
$$x + y = 12$$

$$y = 2x + 3$$

$$x = 3, y = 9$$

check  $(3) + (9) = 12 \checkmark$

$$9 \stackrel{?}{=} 2(3) + 3 \checkmark$$



2. Steve buys eight sandwiches for his friends. Small sandwiches cost \$3 and large ones \$6. He spends \$33 in all. How many of each kind did he buy?

$$s + l = 8$$

$$3s + 6l = 33$$

$$6l = -3s + 33$$

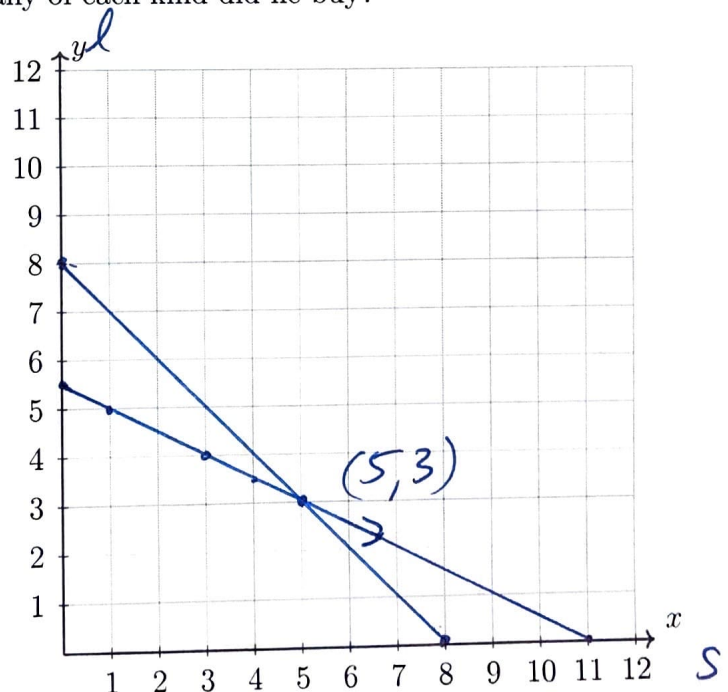
$$l = -\frac{1}{2}s + 5\frac{1}{2}$$

$$s = 5, l = 3$$

check:  $5 + 3 = 8 \checkmark$

$$3(5) + 6(3) = 33$$

$$15 + 18 = 33 \checkmark$$



3. Graph and label the two equations. Mark their intersection as an ordered pair.

$$f(x) = -\frac{1}{2}x + 3$$

$$g(x) = \frac{7}{4}x - 6$$

Are the lines parallel, perpendicular, or neither? Justify your answer.

Neither  $-\frac{1}{2} \times \frac{7}{4} = -\frac{7}{8} \neq -1$

