Roy, Sally, and Jeff drive a total of 50 mi to work each day. Sally drives twice as far as Roy, and Jeff drives 10 mi farther than Sally. Write and solve a system of three equations to find the distance each person drives to work.

x = # miles Roy drives

z = " " Jeff "

y = " " Sally "

$x + y + z = 50$

$y = 2x$

$z = y + 10$

$x + 2x + z = 50$

$z = 2x + 10$

$-10 \quad -10$

$+ \; 3x + z = 50$

$2x - z = -10$

$5x = 40$

$\frac{5x}{5} = \frac{40}{5}$

$x = 8$

$2(8) + 10 = z$

$16 + 10 = z$

$z = 26$

$y = 16$

8, 16, 26

Roy drives 8 miles
Jeff drives 16 miles
Sally drives 26 miles

Together you and I have scored 154 points. You have scored 5 less than twice the number of points that I have scored. Write a system of equations and solve to find the number of points each of us have scored.

You = 101

I = 53

$Y + I = 154$

$Y = 2I - 5$

$2I - 5 + I = 154$

$101 + 53 = 154$

$3I - 5 = 154$

$+5 \quad +5$

$3I = 159$

$I = 53$

$y = 2(53) - 5$

$y = 106 - 5$

$y = 101$

Without actually solving determine if each system of equations has 1, None, or Many solutions.

$y = 6x - 9$

$30x + 5y = 15$

$y = \frac{15 - 30x}{5} = 3 - 6x$

1 solution different slopes

$y = 7x + 20 \quad m = 7$

$y = 7 \quad m = 0$

1 solution : different slope

$y = -4x + 18$

$12x + 3y = 54$

$y = \frac{54 - 12x}{3} = 18 - 4x$

Many Solutions: they are the same line