Ex 1) Tickets to the Civic Center Auditorium for a rock concert were \$19 for seats near the front and \$14 for seats in the back. There were 525 more rear seats sold than front seats, and sales for all tickets totaled \$31,770. How many of each kind of ticket were sold?

	Sales =	**Price x**	**Number of Tickets**
Front	$19x$	19	x
Rear	$14(x+525)$	14	$x+525$
	Total Ticket Sales		$31,770$

Total Sales = Front Seat Sales + Rear Seat Sales

$$31770 = 19x + 14(x+525)$$

$$= 19x + 14x + 7350$$

$$= 33x + 7350$$

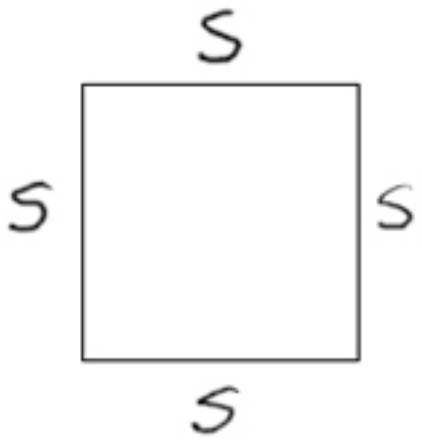
$$-7350 \qquad -7350$$

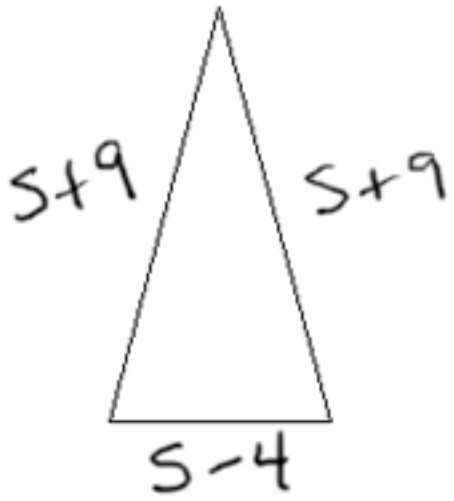
$$24,420 = 33x$$

$$x = 740$$

$$x + 525 = 1265$$

Ex 2) Melissa, a city planner, had two pieces of wire of equal length. She shaped one piece into a square to represent a new building site and the other into an isosceles triangle to represent a nearby park. The base of the isosceles triangle is 4 cm shorter than a side of the square, and each leg is 9 cm longer than the side of the square. How long is the piece of wire?





Perimeter of square = s + s + s + s = 4s

Perimeter of triangle = (s + 9) + (s + 9) + (s - 4)

Perimeter of square = Perimeter of triangle

$4s = (s + 9) + (s + 9) + (s - 4)$

$4s = 3s + 14$

$s = 14$

$\therefore$ perimeter $= 4(14)$

$= 56$

Ex 4) At noon a cargo plane leaves McHare Airport and heads east at 180 miles per hour. Its destination is Jamesville, which is 500 miles away. At 1:00 P.M. a jet takes off from McHare and flies east after the cargo plane at 450 miles per hour. At what time will the jet overtake the cargo plane?

	Distance =	**Rate x**	**Time**
Cargo Plane	$180t$	180	t
Jet	$450(t-1)$	450	$t-1$

Cargo Plane's Distance = Jet's Distance

$$180t = 450(t-1)$$

$$180t = 450t - 450$$

$$270t = 450$$

$$t = 1\tfrac{2}{3} \text{ hours}$$

The jet overtakes the plane at 1:40 P.M.