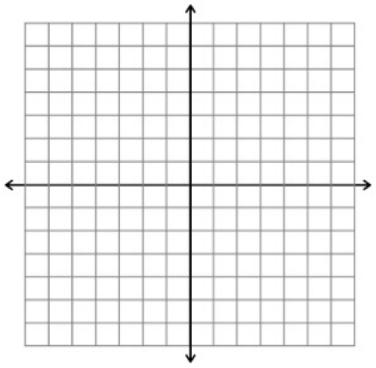
8.2 Modelling and Solving Linear Systems

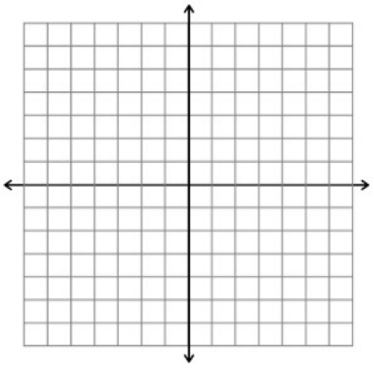
Warm-up:

1. Solve the linear systems by graphing:

a) $x + 2y = -4$
$y = -2x + 1$



b) $x - 2 = 0$
$y = -3$



2. Verify, without graphing, that (4,1) is a solution to the following system of equations.

$5x - 3y = 17$
$2x + 2y = 11$

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Ex. Translate each description into an **algebraic expression**. Define your variable

a) $7 less than twice the ticket price.

b) A bus travelling 85 km/h is 100 km away from its destination.

c) A bus leaves Vancouver heading east at 90 km/h. 700 km away, a car leaves Calgary heading west at 110 km/h.

d) A tank with 100 L of water is filling at a rate of 20L/min

e) A 100 L tank is emptying at a rate of 20L/min

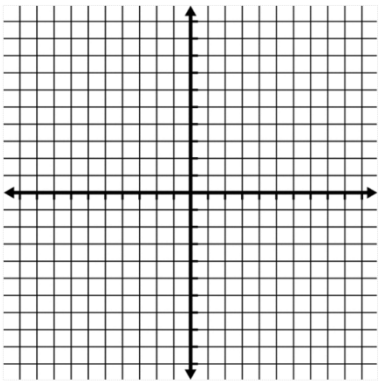
Ex. Write a **system of linear equations** to represent each situation

a) A box contains 23 coins consisting of dimes and quarters. There is a total of $3.35 in the box.

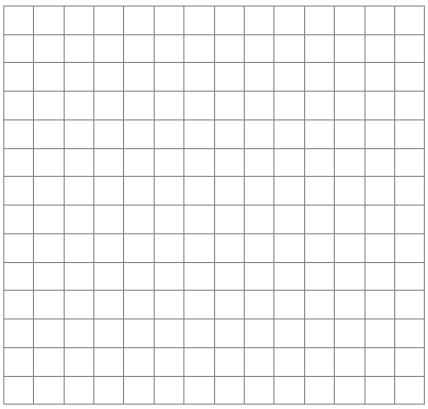
b) A desktop computer begins downloading an 885-megabyte (MB) file at 35 MB/s. At the same time, a laptop begins downloading a 1450 MB file at a rate of 60 MB/s.

Ex. Write a system of linear equations and solve graphically.

a) The sum of two numbers is six, and the difference is 10.



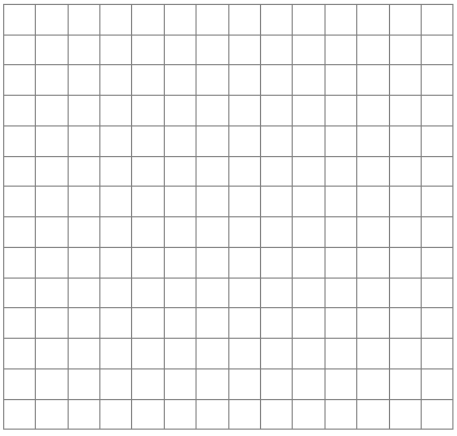
b) During a performance by a theatre company, the main act was on stage for 3 min less than twice the time of the opening act. Together, the two acts performed for 30 min.



c) Two pools start draining at the same time. The larger pool contains 100 L of water and drains at a rate of 8 L/min. The smaller pool contains 40 L of water and drains at a rate of 2 L/min.

Model the draining of the pools algebraically using a system of linear equations.

Represent the linear system graphically. Describe how the information shown in the graph relates to the pools.



Assignment p440 #1, 3-6,8,11,18,19,24

For questions 18,19,24 : Only write the system of equations – use technology to solve graphically