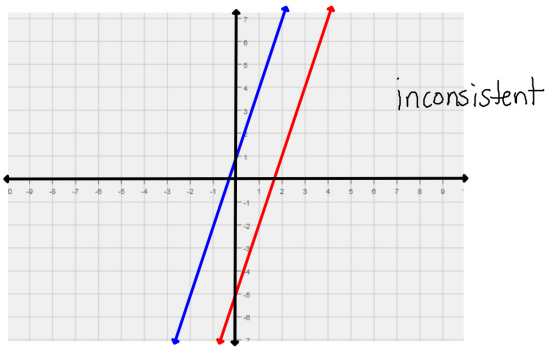# DO NOW

What type of system is illustrated below?

inconsistent

5.3 Using Systems of Equations to Solve Word Problems

Solve word problems using 2 variables.

If there are 2 variables, there must be:

2 equations

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1. The sum of two numbers is 32. The difference between the numbers is 4. Find the numbers.

let $x = 1^{st}$ #
$y = 2^{nd}$ #

$x + y = 32$
$x - y = 4$
_____
$2x = 36$
$x = \frac{36}{2}$
$x = 18$

$x - y = 4$
$18 - y = 4$
$-y = 4 - 18$
$-y = -14$
$y = \frac{-14}{-1}$
$y = 14$

The numbers are 14 and 18.

---

2. The sum of two numbers is 86. Three times the larger number decreased by twice the smaller is 63. What are the numbers?

let $x = $ larger #
$y = $ smaller #

$x + y = 86 \xRightarrow{\times 2} 2x + 2y = 172$
$3x - 2y = 63 \Rightarrow 3x - 2y = 63$
_____
$5x = 235$
$x = \frac{235}{5}$
$x = 47$

$x + y = 86$
$47 + y = 86$
$y = 86 - 47$
$y = 39$

The larger # is 47.
The smaller # is 39.

---

3. Jane is 4 times as old as Karen. Jane's age decreased by Karen's age is 21. Find the age of each.

let $x = $ Karen's age
$y = $ Jane's age

$y = 4x$
$y - x = 21$

$4x - x = 21$
$3x = 21$
$x = \frac{21}{3}$
$x = 7$

$y = 4x$
$y = 4(7)$
$y = 28$

Karen is 7 yrs old.
Jane is 28 yrs old.

---

4. Two angles are complementary. The measure of the larger angle is 30 more than the measure of the smaller angle. Find the degree measure of each angle.

let $x = $ larger angle
$y = $ smaller angle

$x + y = 90$
$x = y + 30$

$(y + 30) + y = 90$
$y + 30 + y = 90$
$y + y = 90 - 30$
$2y = 60$
$y = \frac{60}{2}$
$y = 30$

$x = y + 30$
$x = 30 + 30$
$x = 60$

REVIEW
Complementary
$\hookrightarrow$ sum of 90°
Supplementary
$\hookrightarrow$ sum of 180°

The larger angle is 60°.
The smaller angle is 30°.

HOMEWORK

Worksheet - HW 5.3 Word Problems