

# Chapter 6 Practice Test

Form K

Solve by graphing.

1.  $x - 4y = -17$   
 $y = 4x + 8$

$(-1, 4)$

Solve using substitution

2.  $3x = -2y - 5$   
 $2y = -5x + 5$

$(5, -10)$

Solve using elimination

3.  $3x + 5y = -18$   
 $4x - 10y = -24$

$(-6, 0)$

Write a system of equations to model each situation. Solve by any method.

Sarah is 25 years older than her son Gavin. In ten years, Sarah will be twice Gavin's age. How old are Sarah and Gavin now?

Let  $x =$  Sarah's age is 40

Let  $y =$  Gavin's age is 15

SOLVE: SARAH 40 yr GAVIN 15 yrs

$y + 25 = 2y + 10$   
 $-10 = -y - 10$   
 $15 = y$

$x = 15 + 25$   
 $= 40$

$x = y + 25$

$x = 2y + 10$

A chemist is mixing a solution that is 2% acid and another solution that is 8% acid. She needs to make 75 mL of a solution that is 5% acid. How much of each solution should she use?

Set Up:

Let  $x =$  amt of 2%

SOLVE:

37.5 ml of 2% solution

37.5 ml of 8%

Table:

	Percent	Amt	
Mixture A	.02	$x$ 37.5	.02x
Mixture B	.08	$75 - x$ 37.5	.08(75-x)
Total	.05	75	.05(75)

$.02x + .08(75-x) = .05(75)$   
 $.02x + 6 - .08x = 3.75$   
 $-.06x + 6 - 6 = 3.75 - 6$   
 $-.06x = -2.25$   
 $x = 37.5$

You have \$6000 to invest in two stock funds. The first fund pays 5% annual interest and the second account pays 9% annual interest. If after a year you have made \$380 in interest, how much money did you invest in each account?

Set Up:

Let  $x =$  amt of 5% is 4000

amt of 9% is 2000

SOLVE:

$.05x + .09(6000-x) = 380$   
 $.05x + 540 - .09x = 380$

$-.04x + 540 - 540 = 380 - 540$

$-.04x = -160 = 4000 = x$

Table:

	Percent	Amt	
Mixture A	.05	$x$ 4000	.05x
Mixture B	.09	$6000 - x$	.09(6000-x)
Total		6000	380

c A fashion designer makes and sells jeans. The material for each pair of jeans costs \$8.50. The jeans sell for \$19.50 each. The designer spends \$2500 on advertising. How many pairs of jeans must the designer sell to break even?

228 Jeans to break even

Set Up:  
Let  $x =$  # of jeans

Let  $y =$  cost or income

SOLVE:  $8.5x + 2500 = 19.5x$   
 $-8.5x \quad = -8.5x$

$\frac{2500}{11} = \frac{11x}{11}$

227.27 =  $x$  to breakeven round up 228

A plane leaves Chicago and flies 750 miles to New York. If it takes 2.5 hours to get to New York flying against the wind, but only 2 hours to fly back to Chicago, what is the plane's rate of speed and what is the wind speed?

Let  $p =$  plane's speed is 337.5 m/hr

Let  $w =$  wind's speed is 37.5 mi/hr

SOLVE:

$2.5(p-w) = 750$   
 $2(p+w) = 750$

$2.5p - 2.5w = 750$   
 $\frac{2.5p}{2} + \frac{2.5w}{2} = 750$

$p-w = 300$   
 $p+w = 375$   
 $\frac{2p}{2} = \frac{675}{2}$   
 $p = 337.5$

$r-w$   
 $r+w$

	Rate	Time	Distance
against	$p-w$	2.5	750
with	$p+w$	2	750

$337.5 - w = 300$   
 $-337.5 \quad 337.5$   
 $-w = -37.5$   
 $w = 37.5$

Jacqueline can row 12 km/h in still water. She rowed downstream for 6 hours. The return trip upstream took 8 hours. How far did she row in all?

Let  $d =$  distance rowed is 82.2 Km

Let  $c =$  current rate is 1.7 kmph

SOLVE:

$6(12+c) = d = 72 + 6c = d$   
 $8(12-c) = d \quad 96 - 8c = d$

$72 + 6c = 96 - 8c$   
 $-72 + 8c \quad -72 + 8c$   
 $\frac{14c}{14} = \frac{24}{14} = 1.7$

	Rate	Time	Distance
down	$12+c$	6	$d$
up	$12-c$	8	$d$

$6(12+c) = d$   
 $6(12+1.7) = d$   
 $82.2 = d$