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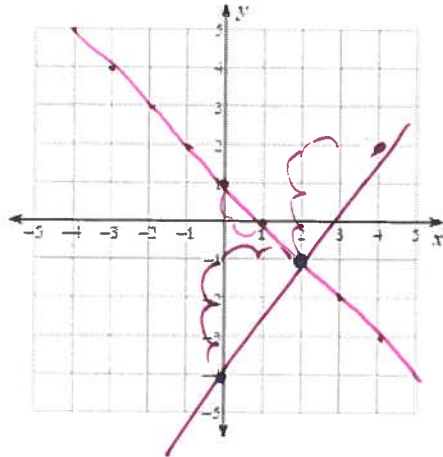
Answer key

End of Term 2 Test Practice questions

1) Solve each system by using the most appropriate method

1) $y = -x + 1$

$y = \frac{3}{2}x - 4$



(2, -1)

• $y = 5x - 19$
 $y = x + 1$

(5, 6)

• $y = 3x - 15$
 $-3x + 7y = 21$

(7, 6)

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$$(1, -2) \bullet \begin{cases} 5x - 6y = 17 \\ -9x + 8y = -25 \end{cases}$$

$$(-4, -3) \bullet \begin{cases} -2x + 8y = -16 \\ x + 3y = -13 \end{cases}$$

- 2) Gerry is walking to his friend's house. He starts at his own house which is located at the point $(-3, 2)$ in a Cartesian plane. His friend's house is located at $(7, -3)$.

- How far does he have to walk to get to his friend's house?

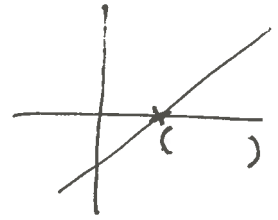
11.18 units

$$(1, 0)$$

- If he stops at the store when he is two fifths of the way to his friend's house, what are the coordinates of the store?

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* X-intercept, Set $y=0$



- 3) Find the distance from the midpoint of Line RS to the x-intercept of $\frac{x}{3} + \frac{y}{5} = 1$.

- R(-2, 7)
- S(6, 9)

(3, 0)

$$(x_m, y_m) = (2, 8)$$

$$mAB = \sqrt{65} \approx 8.06$$

- 4) Point C is located $\frac{2}{3}$ of the way from point A(13, 2) to the point B(16, 11). C (15, 8)

What is the linear equation of the line that passes through the y-axis at 13 and the point C.

(0, 13)

$$y = -\frac{x}{3} + 13$$

- 5) Kathryn spent \$440 on books. Math books cost \$70 and science books cost \$60. If she bought a total of 7, then how many of each kind did she buy?

2 Math
5 Science

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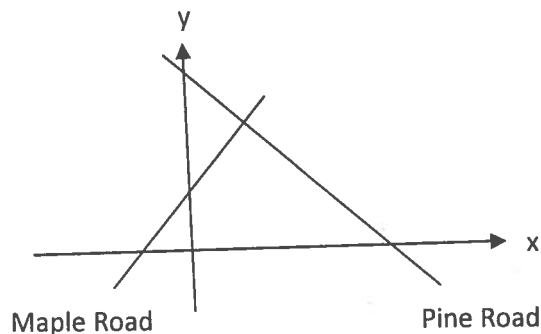
6) The following information is about the adjacent road map:

- The line representing Maple Road has x-intercept of -4 and a y-intercept of 5.
- Maple Road is perpendicular to Pine Road.
- Pine Road has a y-intercept of 12

Find the linear equation for both roads.

Maple: $y = \frac{5}{4}x + 5$

Pine: $y = -\frac{4}{5}x + 12$



7) The sum of 2 numbers is 13. Their difference is 3. What are the 2 numbers?

x : 1st # $x + y = 13$
 y : 2nd # $x - y = 3$

5 and 8

8) Find the equation of the line:

a) Parallel to $y = 3x - 12$ and that passes through the point (2, 1)

$$y = 3x - 5$$

b) Perpendicular to $2x + 2y - 6 = 0$ and that passes through the x-axis at 8.

$$\hookrightarrow y = -x + 8$$

(8, 0)

New line $y = x + b$
 $0 = 8 + b$
 $-8 = b$

$$y = x - 8$$

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- 9) The perimeter of a rectangular field is 248m. The length is equal to three times its width.
What are the field's dimensions?

$$31m \times 93m$$

- 10) Sarah is driving from the store, point S(3, 10), to the airport, point A (18, 20). She gets stuck in traffic for 30 minutes when she has covered a distance of a ratio of 3:2 of the way from the store to the airport. What are the coordinates for where was she stuck in traffic?

$$(12, 16)$$

- 11) Find the distance between the point $\frac{2}{3}$ of the way from point A(-3, 6) to point B(9, -15), and the y-intercept of the line $6x - 3y = 12$.

$$(5, 8) \text{ to } (0, -4)$$

$$\sqrt{41} \approx 6.4$$

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- 12) To raise money for their graduation dance, the Secondary V students in a school bought items and made a profit reselling them. The following table shows the profit earned from selling different quantities of short-sleeved shirts, long-sleeved shirts and tuques. Tuques earn a \$5 profit each.

Number of Items Sold			Profit
short-sleeved	long-sleeved	tuques	
450	300	200	\$3 700
300	250	500	\$4 450

If the profit earned is \$1800 from selling 250 short sleeved and 200 long-sleeved shirts, how many tuques did they sell?

280 tuques

$x = \text{profit from short } \4
 $y = \text{profit from long } \3

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13) Where do the following functions cross each other?

$$f(x) = 2x - 3$$

$$g(x) = 3(x-5)^2 + 2$$

$$3(x-5)^2 + 2 = 2x - 3$$

$$3(x^2 - 10x + 25) + 2 = 2x - 3$$

$$3x^2 - 30x + 75 + 2 = 2x - 3 \quad * \text{ Set } = 0$$

$$3x^2 - 30x + 77 - 2x + 3 = 0$$

$$3x^2 - 32x + 80 = 0$$

~~3x^2 - 32x + 80 = 0~~

$$3x^2 - 12x - 20x + 80 = 0$$

$$3x(x-4) - 20(x-4) = 0$$

$$(3x - 20)(x - 4) = 0 \Rightarrow$$

$$h(x) = x^2 + 2x + 1$$

$$\frac{x}{1} + \frac{y}{4} = 1$$

$$-4x + y = 4$$

$$y = 4x + 4$$

$$y_1 = y_2$$

$$x^2 + 2x + 1 = 4x + 4$$

$$x^2 + 2x - 4x + 1 - 4 = 0$$

$$x^2 - 2x - 3 = 0$$

$$(x-3)(x+1) = 0$$

$$x-3=0 \quad x+1=0$$

$$x_1 = 3 \quad x_2 = -1$$

(4,5) and (6.6, 10.3)

$$\begin{array}{r} 240 \\ / \quad \backslash \\ 120 \quad 120 \\ -4 \quad -60 \\ +12 \quad -20 \end{array}$$

$$3x - 20 = 0 \quad \text{and} \quad x - 4 = 0$$

$$\frac{3x}{3} = \frac{20}{3}$$

$$x_1 = 6\frac{2}{3}$$

$$x_2 = 4$$

$$(-1, 0) \text{ and } (3, 16)$$

* replace x to find y coordinates

$$y = 4x + 4$$

$$y = 4(3) + 4$$

$$y_1 = 12 + 4$$

$$y = 16$$

$$y = 16$$

$$(3, 16)$$

$$y = 4x + 4$$

$$y_2 = 4(-1) + 4$$

$$y_2 = -4 + 4$$

$$y_2 = 0$$

$$(-1, 0)$$

$$\begin{array}{r} -3 \\ / \quad \backslash \\ -3 \quad +1 \end{array}$$

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- 14) Line AB is perpendicular to $2x - 4y = 36$ and passes through $(-2, 9)$.
Parabola C crosses the x-axis at -5 and 3 and passes through $(-7, 5)$.

How far apart are the 2 solutions to the system of equations?

Line AB

$$2x - 4y = 36$$

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

$$y = \frac{x}{2} - 9$$

$$m = \frac{1}{2} \xrightarrow{\text{negative}} -2$$

$$y = mx + b$$

$$9 = -2(-2) + b$$

$$9 = 4 + b$$

$$9 - 4 = b$$

$$5 = b$$

$$y = -2x + 5$$

$$y = a(x-2)(x-3)$$

$$y = a(x-5)(x-3)$$

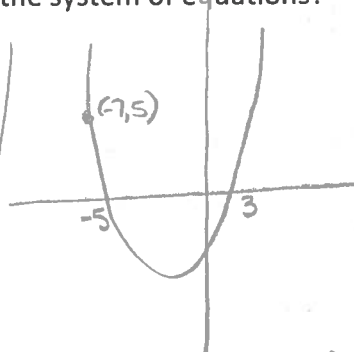
$$5 = a(-7+5)(-7-3)$$

$$5 = a(-2)(-10)$$

$$5 = \frac{20a}{20}$$

$$\frac{1}{4} = a$$

$$y = \frac{1}{4}(x+5)(x-3)$$



$$y_1 = y_2$$

$$\frac{1}{4}(x+5)(x-3) = -2x+5$$

$$\left(\frac{1}{4}(x^2+2x-15)\right)^{\times 4} = (-2x+5)^{\times 4}$$

$$x^2+2x-15 = -8x+20$$

$$x^2+2x+8x-15-20 = 0$$

$$x^2+10x-35 = 0$$

$$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$$

$$x = \frac{-10 \pm \sqrt{10^2-4(1)(-35)}}{2(1)}$$

$$x = \frac{-10 \pm \sqrt{240}}{2}$$

$$x_1 = \frac{-10 + \sqrt{240}}{2}$$

$$x_2 = \frac{-10 - \sqrt{240}}{2}$$

$$x_1 = 2.74$$

$$x_2 = -12.74$$

$$y_1 = -2x+5$$

$$y_2 = 30.49$$

$$(2.74, -0.48) \text{ to } (-12.75, 30.49)$$

$$m_{AB} = \sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$$

$$m_{AB} = \sqrt{(-12.75-2.74)^2 + (30.49-(-0.48))^2}$$

$$= \sqrt{(-15.49)^2 + (30.97)^2}$$

$$= \sqrt{239.94 + 959.14}$$

$$= 34.63$$