

# CHAPTER 1 EXAM REVIEW FINAL ANSWERS

1. e
2. a
3. h
4. b
5. c
6. d
7. i
8. f

9.  $(-2, 5)$

10.  $(4, 6)$       4 paperback books and 6 hard cover books

11.

*Simplify both equations*

(1)  $2x - 8 + y = 6$

(2)  $3x - 2y + 6 = 13$

*Solve (1) for y*

(3)  $y = -2x + 14$

Sub (3) into (2)

$$3x - 2(-2x + 14) + 6 = 13$$

$$3x + 4x - 28 + 6 = 13$$

$$7x = 35$$

$$x = 5$$

Sub  $x = 5$  into (3)

$$y = -2(5) + 14$$

$$y = -10 + 14$$

$$y = 4$$

$$\therefore x = 5 \text{ and } y = 4$$

### Check

$$LS = 2(x - 4) + y \quad RS = 6$$

$$LS = 2(5 - 4) + 4$$

$$LS = 2(1) + 4$$

$$LS = 6$$

$\therefore LS = RS$  for both equations the solution  $x = 5, y = 4$  is correct

$$LS = 3x - 2(y - 3) \quad RS = 13$$

$$LS = 3(5) - 2(4 - 3)$$

$$LS = 15 - 2(1)$$

$$LS = 13$$

12. a) Let the cost of a smoked turkey sub in dollars be  $t$  and the cost of a veggie sub in dollars be  $v$ .

$$2t + 5v = 29$$

$$4t + 3v = 30$$

b)

$$(1) \times 2 \quad 4t + 10v = 58$$

$$(2) \quad \underline{4t + 3v = 30}$$

subtract  $7v = 28$

solve  $v = 4$

sub  $v = 4$  into (1)

$$2t + 5(4) = 29$$

$$2t + 20 = 29$$

$$2t = 9$$

$$t = 4.5$$

A smoked turkey sub costs \$4.50 and a veggie sub costs \$4.

13. Let  $x$  represent the amount of the 25% copper alloy used, and  $y$  represent the amount of the 50% alloy used.

$$x + y = 1500$$

$$0.25x + 0.5y = (0.4)(1500)$$

Solve using substitution or elimination (elimination is shown here)

$$(1) \quad x + y = 1500$$

$$(2) \times 4 \quad \underline{x + 2y = 2400}$$

subtract  $-y = -900$

solve  $y = 900$

sub  $y = 900$  into (1)

$$x + 900 = 1500$$

$$x = 600$$

To make 1500 g of an alloy that is 40% copper, 600 g of the 25% copper alloy and 900g of the 50% copper alloy should be used.

14. Let  $x$  litres represent the number of litres of the 25% acidic solution to use, and  $y$  represent the number of litres of the 50% acidic solution to use.

$$x + y = 500$$

$$0.25x + 0.5y = (0.35)500$$

Solve using substitution or elimination (substitution is shown here)

Sub (3) into (2)

$$\text{Solve (1) for } y \quad 0.25x + 0.5(500 - x) = 175$$

$$\text{sub } x = 300 \text{ into (3)}$$

$$(3) \quad y = 500 - x \quad 0.25x + 250 - 0.5x = 175$$

$$y = 500 - 300$$

$$-0.25x = -75$$

$$y = 200$$

$$x = 300$$

To make the 35% acidic solution, Chris should mix 300 L of the 25% solution and 200 L of the 50% solution.

15. Let the speed of the houseboat in still water (no current) be  $h$ , and the speed of the river's current be  $c$ , both in kilometres per hour.

$$\text{Upstream: } 48 = (h - c) \times 6$$

$$\text{Downstream: } 48 = (h + c) \times 4$$

$$8 = h - c \quad (\text{divided both sides by } 6)$$

$$12 = h + c \quad (\text{divided both sides by } 4)$$

Solve by elimination

$$8 = h - c$$

$$\text{sub } h = 10 \text{ into } 8 = h - c$$

$$\underline{12 = h + c}$$

$$8 = 10 - c$$

$$\text{add } 20 = 2h$$

$$-2 = -c$$

$$10 = h$$

$$2 = c$$

**The houseboat travelled at 10 km/h in still water, and the river current was 2 km/h.**

16. Let  $f$  be the speed of the fishing boat in still water, and  $c$  be the speed of the river's current.

$$\text{Upstream: } 72 = (f - c) \times 4$$

$$\text{Downstream: } 72 = (f + c) \times 3$$

$$18 = f - c \quad (\text{divided both sides by } 4)$$

$$24 = f + c \quad (\text{divided both sides by } 3)$$

Solve by elimination

$$18 = f - c$$

$$\text{sub } f = 21 \text{ into } 18 = f - c$$

$$\underline{24 = f + c}$$

$$18 = 21 - c$$

$$\text{add } 42 = 2f$$

$$-3 = -c$$

$$21 = f$$

$$3 = c$$

**The fishing boat's speed in still water was 21 km/h, and the river's current was 3 km/h.**