SAMPLE CHAPTER TEST: SOLUTIONS

Part A: Multiple Choice

1. Store A:
$20.00 + 0.5($20.00) + 0.5($20.00) = $40.00
Store B:
0.35 × $20.00 = $7.00
$20.00 − $7.00 = $13.00
$13.00 × 3 = $29.00
Store C:
$20.00 + $20.00 = $40.00
The answer is b). Store B has the best offer.

2. To estimate how many songs can be played in one hour, use 4 minutes as the average song length and convert 2 hours to minutes.
2 h × 60 = 120 min

$$\frac{4 \text{ min}}{1 \text{ song}} = \frac{120 \text{ min}}{x}$$

$$x\left(\frac{4 \text{ min}}{1 \text{ song}}\right) = \left(\frac{120 \text{ min}}{x}\right)x$$

$4x = 120$

$$\frac{4x}{4} = \frac{120}{4}$$

$x = 30$
The answer is d). They can play about 30 songs in two hours.

3. Students should be able to narrow this down to either b) or d) by looking at the numbers. (Laurie and Sara earn more in less time than either Antoine or Ken.)
b) $72.00 ÷ 5 h = $14.40/h
d) $89.00 ÷ 6 h = $14.83/h
The answer is d).

4.

$$\frac{1.00 \text{ peso}}{\$0.083\ 443} = \frac{300.00 \text{ pesos}}{x}$$

$$0.083\ 443x\left(\frac{1}{0.083\ 443}\right) = \left(\frac{300}{x}\right)0.083\ 443x$$

$x = 0.083\ 443(300)$
$x = 25.03
The answer is a).

5.

$$\frac{\$1.644\ 814 \text{ CAD}}{1.00 \text{ euro}} = \frac{\$1200.00 \text{ CAD}}{x \text{ euros}}$$

$$x\left(\frac{1.644\ 814}{1}\right) = \left(\frac{1200.00}{x}\right)x$$

$1.644\ 814x = 1200$

$$\frac{1.644\ 814x}{1.644\ 814} = \frac{1200}{1.644\ 814}$$

$x = €729.57$
She will have 729.57 euros to spend. The answer is b).

Part B: Short Answer

6. a)

$$\frac{\$69.07}{10 \text{ tiles}} = \$6.90/\text{tile}$$

b)

$$\frac{\$1.45}{25 \text{ screws}} = \$0.06/\text{screw, rounded to the nearest cent}$$

7. a)

$$\frac{\$0.95}{25 \text{ min}} = \$0.04/\text{min, rounded to the nearest cent}$$

b)

$$\frac{120 \text{ words}}{3 \text{ min}} = 40 \text{ words/min}$$

c)

$$\frac{240 \text{ km}}{4 \text{ h}} = 60 \text{ km/h}$$

d)

$$\frac{\$22.80}{3 \text{ h}} = \$7.60/\text{h}$$

Part C: Extended Answer

8. a) 10 − 6 = 4 people, in addition to the 6 for $65.00.
$65.00 + 4($12.00) = $113.00 total cost
$113.00 ÷ 10 people = $11.30/person
b)

Number of people	*Cost*
9	$101.00
10	$113.00
11	$125.00
12	$137.00
13	$149.00
14	$161.00
15	$173.00

9. First, find how much time it takes Patrick to unload 1 pallet.

$$\frac{60 \text{ mins}}{17 \text{ pallets}} = 3.53 \text{ mins/pallet}$$

Then, multiply the number of pallets Lylah will unload and shelve by this unit rate.
3.53 × 25 = 88.24
It will take her about 89 minutes to move 25 pallets.

10. a) One way to solve this is to find the unit price of both cans of soup.
$18.89/12 cans = $1.57/can
$30.69/24 cans = $1.28/can
Another way to solve this would be to notice that the price of Tastes Like Homemade can be doubled to get the price of 24 cans so the two brands can be compared.
$18.89 × 2 = $37.78
Students may suggest other methods.
Savoury Soup is the better deal.

b)

$$\frac{\$30.96}{12 \text{ cans}} = \frac{\$500.00}{x \text{ cans}}$$

$$12x\left(\frac{30.96}{12}\right) = \left(\frac{500}{x}\right)12x$$

$$\frac{371.52x}{12} = \frac{6000x}{x}$$

$30.96x = 6000$

$$\frac{30.96x}{30.96} = \frac{6000}{30.96}$$

$x = 193.80$ Because you cannot buy a portion of a can of soup, round up to get 194 cans.

11. a) The ratio of hours worked is 12:8, simplified to 3:2.
b) Stan's hourly rate of pay is $110.20 ÷ 12 = $9.18.
c) Cecelia's hourly rate of pay is $90.40 ÷ 8 or $11.30.
d) The ratio of Stan's hourly rate of pay to Cecelia's hourly rate of pay is $9.18:$11.30.

12. a) Regular model:

$$\frac{12.4 \text{ L}}{100 \text{ km}} = 0.124 \text{ L/km}$$

If the car uses 0.124 L/km and is driven 24 000 km, multiply the L/km by 24 000.
24 000 × 0.124 = 2976 L
Hybrid model:

$$\frac{10.8 \text{ L}}{100 \text{ km}} = 0.108 \text{ L/km}$$

If the car uses 0.108 L/km and is driven 24 000 km, multiply L/km by 24 000.
24 000 × 0.108 = 2592 L
The regular model would use 2976 L of fuel, and the hybrid model would use 2592 L if you drove 24 000 km.
b) First find the difference in price between the two models.
$25 840.00 – $24 456.00 = $1384.00
Determine the cost of fuel for 1 km for each car.
Regular:
0.124 × $1.03 = $0.127 72
Hybrid:
0.108 × $1.03 = $0.111 24
Then consider the difference in fuel costs per km.
$0.127 72 – $0.111 24 = $0.065 96
If you save 6.596 cents per km by driving the hybrid model, how many km do you need to drive to save $1384.00?

$$\frac{\$0.065\ 96}{1} = \frac{\$1384.00}{x}$$

$$x\left(\frac{\$0.065\ 96}{1}\right) = \left(\frac{\$1384.00}{x}\right)x$$

$0.065\ 96x = 1384.00$

$$x = \frac{1384.00}{0.065\ 96}$$

$x = 20\ 982.41$ km You would need to drive 20 982.41 km to save enough in fuel costs to pay the extra cost of the hybrid model.
c) Your reasons for buying the hybrid could include:

- you wish to save the environment
- you think the price of fuel will rise
- you think the hybrid will get a better resale price