-1 missing / incorrect units
-1 rounding errors

Mathematics Essentials 2016
Unit 1 Test 4
Task Weighting: 5%

Eastern Goldfields College

Student Name: SOLUTIONS

Time Allowed: 45 Minutes

Total Marks: ~~40~~ 44

Calculators and files are allowed in this test.

Answer all of the following questions. <u>Show all working to maximise marks.</u>

Question 1 [8 Marks]

Complete the missing values to make the conversions true

(a) 6 kilograms = 6000 grams ✓

(b) 5 tonnes = 5000 kilograms ✓

(c) 40 cm^3 = 40000 mm^3 ✓

(d) 3 m^3 = 3000000 cm^3 ✓

(e) 70000 cm^3 = 0.07 m^3 ✓

(f) 5000 watts = 5 kW ✓

(g) 0.812 kW = 812 watts ✓

(h) 5400 joules = 5.4 kilojoules ✓

Question 2 [2 Marks]

Joe makes coffees in a coffee shop. He uses one-fifth of a litre of milk to make one chocolate latte. There are only 6 L of milk left. How many chocolate lattes can he make?

5 per Litre

5 × 6 = 30 lattes

✓ ✓

Question 3 [2 Marks]

Harry is fixing the driveway to his property. He needs 0·75 tonnes of blue metal that costs $82 per tonne. How much will the blue metal Harry requires cost?

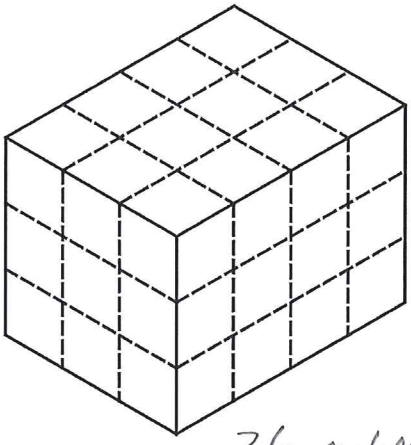
82×0.75 ✓

$\$61.50$

Question 4 [3 Marks: 1, 2]

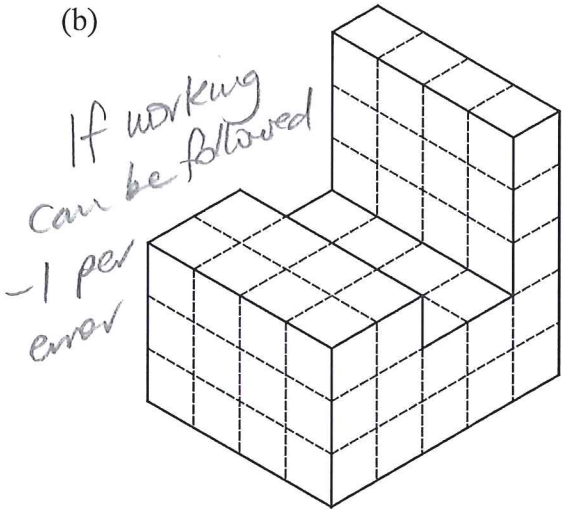
Calculate the volume of each of these prisms by counting the cubes.

(a)



36 cubes ✓

(b)



If working can be followed -1 per error

60 cubes ✓

Question 5 [5 Marks: 1, 1, 1, 2]

A clothes dryer is rated at 2350 watts and is used for about half an hour each morning during winter.

a) Convert 2350 watts to kilowatts

2·35 ✓

b) How many hours is the dryer used each week?

3·5 hrs ✓

c) What is the total number of kilowatt hours used by the dryer in one week.

2.35×3.5

$= 8.225$ ✓ Accept 8.2

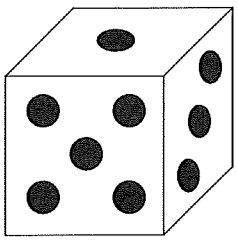
(d) At 23.8 cents per kWh, how much will it cost to run the dryer in one week.

23.8×8.225

$= \$1.96$ ✓

Question 6 [2 marks]

Calculate the volume of this dice if each face (flat surface) is 2 cm by 2 cm.



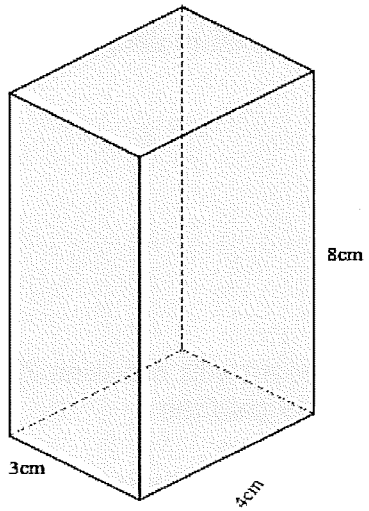
$V = 2 \times 2 \times 2$ ✓

$V = 8\ cm^3$ ✓

Question 7 [6 Marks: 2, 2, 2]

Calculate the volume of these prisms showing all your working.

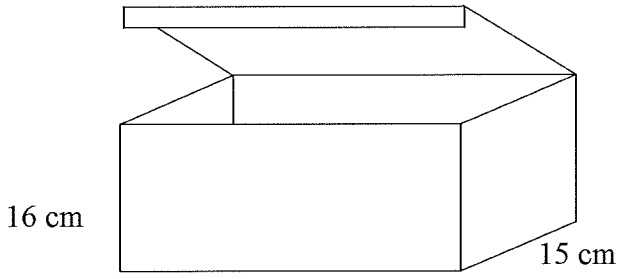
a)



$V = 3 \times 4 \times 8$

$= 96\ cm^3$ ✓

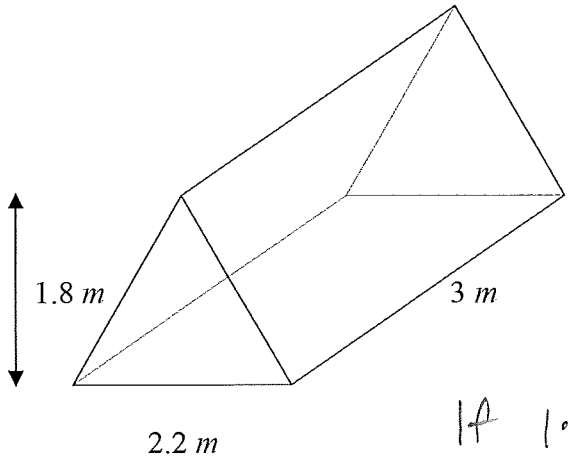
b)



$V = 16 \times 15 \times 35$

$= 8400\ cm^3$ ✓

c)



$V = 2.2 \times 1.8 \div 2 \times 3$ ✓

$= 5.94\ m^3$ ✓

If $1.8 \times 2.2 \times 3 = 11.88$ award no marks

Question 8 [6 Marks: 2, 2, 2]

Recipes often measure liquid in cups and teaspoons. I cup = 250 ml and 1 teaspoon = 5 ml

a) How many cups in 5 Litres?

or other methods

$5000 \div 250 = 20$ ✓ ✓

b) How many teaspoons in a cup?

$250 \div 5$ ✓

$= 50$ tspns ✓

c) What fraction of a litre is a teaspoon? Write your answer in simplest form.

$\frac{5}{1000}$ ✓ $= \frac{1}{200}$ ✓

Question 9 [4 Marks]

Skim milk contains 162 kJ per 100 ml whereas full cream milk contains 270 kJ per 100 ml. NOTE: 1 calorie = 4.184 and 1 kJ = 0.239 calories

How many more calories are there in a cup of full cream milk than a cup of skim milk?

$270 - 162 = 108$ ✓

$108 \times 0.239 = 25.812$ ✓ / 100 ml.

$25.812 \times 2.5 = 64.53$ cals more.

✓ ✓

or other methods

If calculate / 100 ml award ✓✓

Question 10 [2 marks]

a) A car's rectangular prism shaped fuel tank has dimensions of 670 mm by 605 mm by 210 mm. What is it's capacity to the nearest litre?

$67 \times 60.5 \times 21$ ✓

$= 85123.5$ ml

$\therefore 85$L ✓

b) The actual capacity of fuel tank can vary by as much as 3% of the stated capacity. Using your answer from part a) calculate the maximum and minimum capacity possible with a 3% variation.

Min $85 - 2.55 = 82.45$L ✓

Max $85 + 2.55 = 87.55$L ✓

Or can use 85.1235 L

c) On many bikes and cars the fuel light comes on when the tank is at 15% of the capacity or less. How much fuel remains when the fuel light comes on in this vehicle?

$0.15 \times 85 = 12.75$L

✓ ✓

END OF TEST