−1 rounding
−1 incorrect units/missing units

Mathematics Essentials 2016
Unit 3/4 Test 1
Task Weighting: 6%

Eastern Goldfields College

Student Name: _____

Time Allowed: 55 Minutes

Total Marks: 50 (57)

Calculators and files are allowed in this test.

Answer all of the following questions. Show all working where appropriate to maximise marks.

Question 1 (5 marks)

Circle the correct answer to each of the following:

a) 2.15 km converts into how many metres?

(i) 21.5 m (ii) 215 m (iii) 2150 m ✓ (iv) 21500 m

b) 250 L converts to how many ml?

(i) 250 ml (ii) 2500 ml (iii) 0.25 ml (iv) 250000 ml ✓

c) 1 m^2 converts to how many cm^2?

(i) 100 cm^2 (ii) 10 000 cm^2 ✓ (iii) 100 000 cm^2 (iv) none of these

d) 5.4 cm^2 converts to how many mm^2?

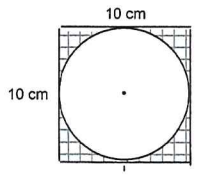
(i) 540 mm^2 ✓ (ii) 5400 mm^2 (iii) 54 mm^2 (iv) none of these

e) 15 m^3 has a capacity of how many Litres?

(i) 1500 ml (ii) 15 L (iii) 15 000 L ✓ (iv) 150 000 ml

Question 2 (3 Marks)

Find the shaded area. Give your answer to one decimal place.

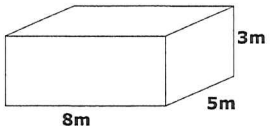
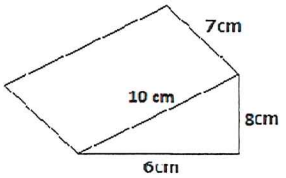
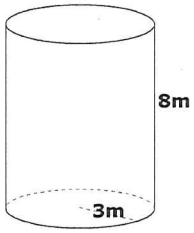


$A = 10^2$ ✓ $- 25\pi$ ✓ (78.5398)

$= 21.5\ cm^2$ ✓

eg of just find area of circle ✓

Question 3 (10 marks) (12)

Name each Shape (2 marks)	Volume	Surface Area
 Name: Rectangular Prism	$V = 8 \times 5 \times 3$ $= 120\ m^3$ ✓	SA = $2(8\times5) + 2(5\times3) + 2(8\times3)$ ✓✓ $= 158\ m^2$
 Name: Triangular Prism	$V = \frac{1}{2} \times 6 \times 8 \times 7$ ✓ $= 168\ cm^3$ ✓	SA = $7\times8 + 2(3\times8) + 7\times10 + 6\times7$ ✓✓ $= 216\ cm^2$
 Name: Cylinder	$V = 9\pi \times 8$ $= 226.2\ m^3$ ✓ (226.19)	SA = $18\pi + 6\pi \times 8$ ✓✓ $= 207.3\ m^2$ (207.345115)

✓✓ −1 per error

Question 4 (2 marks)

What is the capacity of the third shape in Q3

$1\ m^3 = 1000\ L$

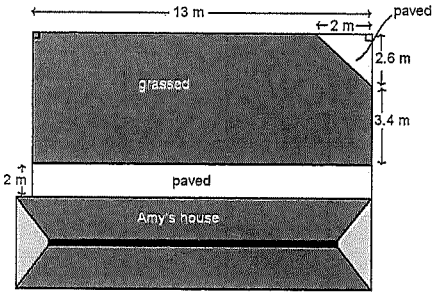
226194.7 L

or 226200 L ✓✓

226.2 KL

Question 5 (7 marks – 3, 2, 2)

Here are the plans for Amy's backyard. She wishes to pave part of it and have grass for the rest.



a) What is the total area of the paved sections?

$A = 2 \times 13 + 2 \times 6$

$= 38.6\ m^2$

b) What is the total area of the grassed region?

$A = 6 \times 13 - 2 \times 6$

$= 75.4\ m^2$

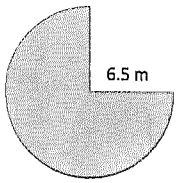
c) Amy wants to fence her back yard (not including the distance along the house). Calculate the total length to be fenced.

$P = (2 + 3.4 + 2.6) \times 2 + 13$

$P = 29\ m$

Question 6 (3 marks)

Calculate the perimeter of the shape below:



$P = 0.75 \times 13\pi + 13$

$= 43.63\ m$

Question 7 (6 Marks – 2, 1, 3)

A bike has wheels that are 66.5 cm in diameter.

(a) How far does the bike move **(to the nearest centimetre)** in one full turn of the wheel?

$C = \pi \times 66.5 \sim 209\ cm$ (208.9)

(b) How far would the bike move after 30 turns of the wheel?

$6267.5\ cm \sim 62.7\ m$

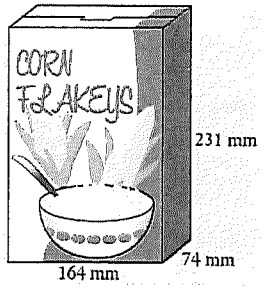
(c) How many turns would it take to travel three kilometres

$300000 \div 208.9$

$= 1435.98 \sim 1436$ turns

Question 8 (5 Marks – 3, 2)

a) Find the surface area of this box to the nearest cm^2



$SA = 2(23.1 \times 7.4) + 2(7.4 \times 16.4) + 2(16.4 \times 23.1)$

$= 1342.28$

$\therefore 1342\ cm^2$

b) Find the volume of this box correct to the nearest cubic centimetre.

$V = 16.4 \times 7.4 \times 23.1$

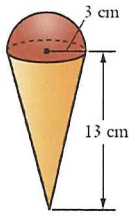
$= 2803.4$

$\therefore 2803\ cm^3$

Question 9 (5 marks – 3, 2)

A **choctop cone** is a favourite with movie-goers. The cone is full of ice-cream and has a scoop of ice-cream on top in the shape of a hemisphere which is covered in chocolate as shown below.

a) What is the total volume of ice-cream? (Round answer to one decimal place)



$V = \frac{4}{3}\pi \times 3 \div 2 + \pi \times 9 \times 13 \div 3$ ✓

$= 179.1\ cm^3$ ✓

$56.55 + 122.52$

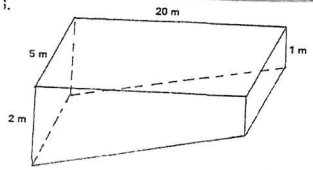
b) What surface area is covered with chocolate? (Round answer to nearest whole number)

$SA = 2\pi \times 9 = 56.55$ ✓

$\therefore 57\ cm^2$ ✓

Question 10 (4 marks) – 2, 2

i.



A swimming pool is 20 m X 5 m. The shallow end is 1 m deep and it slopes evenly to a depth of 2 m at the other end.

a) Find in cubic metres the volume of water this pool will hold.

$V = (1+2) \div 2 \times 20 \times 5$ ✓

$= 150\ m^3$ ✓

b) What is it's capacity in kilolitres?

$150000\ L \rightarrow 150\ kL$ ✓✓

END OF TEST