Mathematics Essentials 2017

EGC Eastern Goldfields College

Test 2 Unit 2   Calculator Free   Task Weighting: 9%

Student Name: ___MARKING KEY___

Time Allowed: 20 Minutes   Total Marks: 24

No calculator or notes are allowed in this section.

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

Simplify the following ratios.

3:12 ✔   Correct working ✔ (will vary)

a) 10 : 15   b) 1.5 : 6   c) $\frac{1}{4} : \frac{1}{2}$

2:3 ✔   1:4 ✔   1:2 ✔

Question 2 [2 marks]

Divide $200 in the ratio 6:4

$120 : $80 ✔ ✔

Question 3 [2 marks]

Simplify the ratio 4 Days : 2 Weeks

4:14 ✔
2:7 ✔

Question 4 [2 marks]

Calculate the simple interest on $1500 at a rate of 10% p. a. over 2 years?

$150 × 2 = $300 ✔ ✔

Question 5 [3 marks]

Convert 50 m/sec into km/hr   (Show calculations so your answer can be checked)

Question 6 [2 marks]

Decrease 500 by 15%

50 ✔
25 ✔

500
-75
425        $425 ✔

Question 7 [2 marks: 1, 1]

Answer the following:

a) An increase of 10% followed by a decrease of 10% means an overall change of 0%

True   or   (False) ✔

b) __Depreciation__ ✔ is a decrease in the value of a property caused by lower demand.

Question 8 [1 mark]

Write 0.072 as a percentage

7.2% ✔

Question 9 [5 marks: 1, 2, 2]

In a car park, 10 cars are white, 5 are blue, 3 are black and 2 are red.

a) What is the ratio of black cars to white cars?

3:10 ✔

b) What is the ratio of blue cars to total cars? Simplify your answer.

5:20 ✔
1:4 ✔

c) What percentage of the cars are red?

$\frac{2}{20} = \frac{1}{10} = 10\%$ ✔

✔

or other methods.

END OF CALCULATOR FREE SECTION

Mathematics Essentials 2017

Test 2 Unit 2   Calculator Assumed

EGC Eastern Goldfields College

Student Name: _MARKING KEY_

Time Allowed: 35 Minutes   Total Marks: 37

Calculator and notes are allowed in this section.

Question 10 [3 Marks]

If three students share $50 cash between themselves equally, explain how much each student ends up with? Round your answer appropriately.

$$50 \div 3 = 16.66 \checkmark$$

$$\therefore \$16.65$$

Question 11 [2 Marks]

In a mug of cappucino coffee, coffee syrup and hot milk are mixed in the ratio 2 : 3. A large mug holds 420 mL of cappucino coffee. How many mL of hot milk are in the mug of coffee?

$420 \div 5$
$= 84 \checkmark$

$84 \times 3 = 252$
$\therefore 252 mL \checkmark$

or $\frac{3}{5} \times 420 \checkmark$
$= 252 mL \checkmark$

Question 12 [3 Marks: 1, 1, 1]

−1 no units

Complete the following table:

Distance Travelled	Time Taken	Average Speed
120km	2 hours	60 km/h ✓
200km ✓	4 hours	50km/h
150km	5 hours ✓	30km/h

Question 13 [5 Marks: 2, 3]

a) Convert 3.6 km / h to m / s

or others.

$3.6 \times 1000 \div 60 \div 60 = 1 m/s$ ✓ ✓

b) If a go-cart travelled 2100 metres for 300 minutes, what was its speed in kilometres per hour?

$2100 \div 1000 = 2.1 km$ ✓

$300 \div 60 = 5 h$

$S = \frac{d}{t}$

$= \frac{2.1}{5}$ ✓

$= 0.42 \ km/h$ ✓

Question 14 [6 Marks: 2, 2, 2]

A petrol station has the following prices:

ULP (Unleaded)	125.6 cents per litre
PULP (Premium Unleaded)	141.5 cent per litre
Diesel	135.8 cents per litre

Find the cost of:

(a) 57.2L of Diesel, round your answer to nearest 10 cents.

$57.2 \times 1.358 = 77.6776$ ✓

$= \$77.70$ ✓

(b) 82L of ULP, round your answer to the nearest dollar.

$82 \times 1.256 = 102.992$ ✓

$= \$103$ ✓

(c) If you only had $40 how many litres of ULP could you buy? Round your answer to 1 decimal place.

$40 \div 1.256 = 31.847$ ✓

$\therefore 31.8 L$ ✓

Question 15 [5 marks: 2, 1, 2]

Don uses a drip system to water the small plants in his hothouse. Each plant needs 50 mL of water per day.

(a) How many litres of water are needed per day for 25 plants?

$$25 \times 50 = 1,250 \div 1000 = 1.25 \text{ L}$$ ✓ ✓

(b) If 1 mL of water contains 12 drops, how many drops are needed to water each plant per day?

$$50 \times 12 = 600$$ ✓

(c) What is the drip rate (in drops per minute) needed for each plant if the drip system runs for 4 hours per day?

FT from part b ↓

$$4 \times 60 = 240$$ ✓

$$\frac{600}{240} = 2 \cdot 5 \text{ drops/min}$$ ✓

Question 16 [5 marks: 2, 3]

Select the best buy in each case below: (Show working to justify your choice)

(a) (250 g pack for $1.75) ✓ or 500 g pack for $3.55

$$1.75 \times 2 = \$3.50 \quad \text{or} \quad \$3.55 \div 2 = 1.775$$ ✓ or other methods g/$ c/g

(b) 200 g pack for $3.40 or (250 g pack for $4.00) ✓

$$3.4 \times 5 = 17$$ ✓ $$4 \times 4 = 16$$ ✓

or other methods

Question 17 [2 marks]

In Australia, 10% GST is added to the price of most items to determine the selling price. A Nike Shirt was priced at $86 before GST. What will the shirt cost after GST?

$$86 \times 1.1 = \$94.60$$ ✓ ✓

Question 18 [6 marks]

Thomas wanted to purchase a car valued at $13 290. He already had $2 500 in savings and wanted to borrow the rest from his rich Uncle Dave. Uncle Dave agreed to loan Thomas the money, on the condition he pay him back over 5 years at 8.5% p.a simple interest.

If Thomas makes monthly payments to his uncle, how much does each one need to be to repay the full loan within the time period given? Round your answer to the nearest cent.   **SHOW YOUR WORKING**

$13,290 - 2,500 = 10,790$ ✔

$10\ 790 \times 0.085 \times 5 = 4585.75$ ✔

$4585.75 + 10,790 = 15,375.75$ ✔

$5 \times 12 = 60$ ✔

$15,375.75 \div 60 = \$256.26$ ✔

END OF TEST