Mathematics General Unit 1
(Applications Course in WA)

Topic: Skills in percentage, ratio and rates

Time: 45 mins   Marks: /45 marks

Question One: [1, 2, 1, 1, 1, 1, 1, 1, 1 : 10 marks]

a)   Complete the following ratios:

ii) $7:\_\_\_:8 = 42:36:\_\_\_$ ii) $12:9 = 8:\_\_\_$ iii) $18:\_\_\_ = 4.5:1$

b)   Simplify the following ratios:

i) $42:18$ iii) $0.25:1$ iii) $\frac{7}{10}:\frac{1}{5}$

iv) $105:42$ v) $4.4:16$ vi) $\frac{2}{3}:\frac{5}{13}$

Question Two: [1, 1, 2, 2: 6 marks]

Calculate the following percentages:

a)   10% of 222   b)   30% of 50

c)   Increase 120 by 75%   d)   Reduce 90 by 11%

Question Three: [5, 4: 9 marks]

a)   200g prepackaged grape Perino tomato packs are on special at Coles. 2 packs for $6. 1 pack costs $3.50. How much do you save per kilo with the special?

b)   Calculate the unit price of each of the following to show which is the best value option.

Harris
**Premium Coffee Beans
1kg**

for $25

Illy Caffe
Coffee Beans 250g

for $15

Vittoria
**Espresso Coffee Beans
200g**

100% Arabica

for $9

Question Four [3, 2, 6: 11 marks]

a)   If a map has a scale of 1 : 1000, what is the real distance for a 2 cm measurement on
        the map, in:

i)   metres   ii)   kilometres

b)   Blake made a scale drawing of a super-yacht. If the yacht is 30 m long in real life and
        it is 15 cm in the drawing, what scale has been used?

c)   Convert the following rates to m/sec

i)   6000cm /2 min   ii) 72 km /1 hours

Question 5: [3, 2, 2, 2: 9 marks]

a)   Louise's bank shares rose by 15%. If they were originally $0.40 each, what are they worth now?

b)   Sam received a profit from an investment which paid out in the ratio of 2 : 3. If Sam invested $10 000 how much profit did she make?

c)   Lisa earns 8% commission on sales. How much commission does she receive on a $640 sale?

d)   Holly receives a quote from a plumber for $239. This price is excluding GST. What is cost of the job when GST is included?

education equals

Skills in percentage, ratio and rates
SOLUTIONS

Time: 45 mins   Marks: /45 marks

Question One: [2, 1, 1, 1, 1, 1, 1, 1, 1 : 10 marks]

a)   Complete the following ratios:

ii) $7:6:8 = 42:36:48$ ✔✔   ii) $12:9 = 8:6$ ✔   iii) $18:4 = 4.5:1$ ✔

b)   Simplify the following ratios:

i) $42:18$ iii) $0.25:1$ iii) $\frac{7}{10}:\frac{1}{5}$

$7:3$ ✔ $25:100$ $\frac{7}{10}:\frac{2}{10}$

$1:4$ ✔ $7:2$ ✔

iv) $105:42$ v) $4.4:16$ vi) $\frac{2}{3}:\frac{5}{13}$

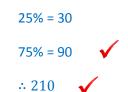$17:6$ ✔ $44:160$ $\frac{26}{39}:\frac{15}{39}$

$11:40$ ✔ $26:15$ ✔

Question Two: [1, 1, 2, 2: 6 marks]

Calculate the following percentages:
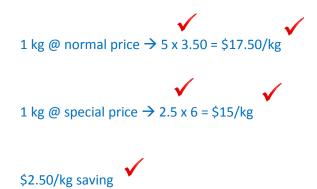
a)   10% of 222   b)   30% of 50

$10\% = 22.2$ ✔ $10\% = 5$

$30\% = 15$ ✔

c)   Increase 120 by 75%   d)   Reduce 90 by 11%

$25\% = 30$ $10\% = 9$

$75\% = 90$ ✔ $1\% = 0.9$
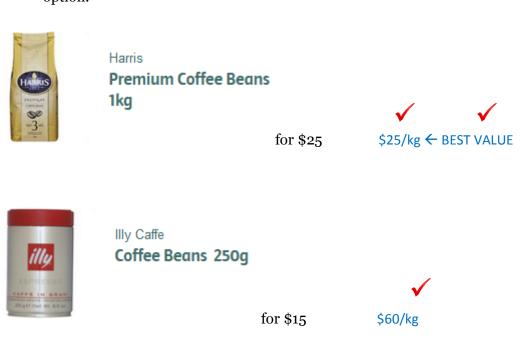
$\therefore 210$ ✔ $11\% = 9.9$ ✔ $\therefore 80.1$ ✔

Question Three: [5, 4: 9 marks]

a)   200g prepackaged grape Perino tomato packs are on special at Coles. 2 packs for $6. 1
        pack costs $3.50. How much do you save per kilo with the special?

1 kg @ normal price → 5 x 3.50 = $17.50/kg

1 kg @ special price → 2.5 x 6 = $15/kg

$2.50/kg saving

b)   Calculate the unit price of each of the following to show which is the best value
        option.

Harris
**Premium Coffee Beans
1kg**

for $25 $25/kg ← BEST VALUE

Illy Caffe
Coffee Beans 250g

for $15 $60/kg

Vittoria
**Espresso Coffee Beans
200g**
100% Arabica

for $9 $45/kg

Question Four [3, 2, 6: 11 marks]

a)   If a map has a scale of 1 : 1000, what is the real distance for a 2 cm measurement on the map, in:

i)   metres   ii)   kilometres

1 : 1000   0.02 km   ✓
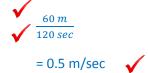
2 : 2000 cm ✓

20 m ✓

b)   Blake made a scale drawing of a super-yacht. If the yacht is 30 m long in real life and it is 15 cm in the drawing, what scale has been used?
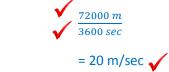
15 : 3000   ✓

1 : 200   ✓

c)   Convert the following rates to m/sec

i)   6000 cm /2 min   ii) 72 km /1 hours

✓
$\dfrac{60\ m}{120\ sec}$
✓

= 0.5 m/sec ✓

✓
$\dfrac{72000\ m}{3600\ sec}$
✓

= 20 m/sec ✓

Question 5: [3, 2, 2, 2: 9 marks]

a) Louise's bank shares rose by 15%. If they were originally $0.40 each, what are they worth now?

10% = $0.04 ✓

5% = $0.02   Now worth $0.46 ✓

15% = $0.06 ✓

b) Sam received a profit from an investment which paid out in the ratio of 2:3. If Sam invested $10 000 how much profit did she make?

2:3 ✓

10000: 15000

Profit of $5000 ✓

c) Lisa earns 8% commission on sales. How much commission does she receive on a $640 sale?

10% = 64

1% = 6.4

2% = 12.8 ✓

8% = $51.20 ✓

d) Holly receives a quote from a plumber for $239. This price is excluding GST. What is cost of the job when GST is included?

10% = 23.90 ✓

239.00
+23.90
262.90

Cost of job = $262.90 ✓