Name: _____ Date: _____

Baldivis Secondary College

Year 11 Applications

Test 1, 2020

Topics – Percentages, Rates, Substitution and Formulae

Time:	15 minutes
Marks:	/14 ~~/13~~
Total Marks:	/46 ~~/45~~

Total Time: **15** minutes

Weighting: 6% of the year

Equipment: **Resource Free – Calculators are not permitted.**

1. [1, 3 = 4 marks]

a) Find 10% of $240

$24 ✓ -1 unit each time!

b) Using your answer to part a) or otherwise find:

(i) 1% of $240

$2.40 ✓ ← -1 if no .40

(ii) 5% of $240

$12 ✓

(iii) 8% of $240

$19.20 ✓

2. [1 mark]

The formula to approximate temperature in Fahrenheit (F) given the temperature in Centigrade (C) is $F = \frac{9C}{5} + 32$

What is the temperature in degrees Fahrenheit if it is -5°C?

$F = \frac{9(-5)}{5} + 32$

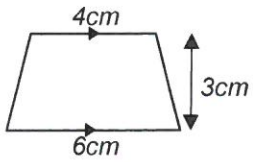
$f = \frac{-45}{5} + 32 = -9 + 32 = 23^{\circ}F$ ✓

5

3. [1, 2 = 3 marks]

The formula for the area of a trapezium is $A = \frac{a+b}{2} \times h$ where A is the area, *a* and *b* are the parallel sides and *h* is the perpendicular height.

(a) Find the area of this trapezium:



$\frac{4+6}{2} \times 3 = 30$ cm² ✓

(b) If the area of a trapezium is 18 cm² and the perpendicular height is 3cm, give ONE possible combination of lengths of the parallel sides.

5/7, 4/8, 3.2/2.8 .... 7 to 12

$18 = \frac{a+b}{2} \times 3$ ✓ Formula/working ✓ Add to 12, not 6+6

6. [1, 1, 1 = 3 marks]

(a) To increase an amount by 20% we multiply by 1.2 ✓

(b) To decrease an amount by 35% we multiply by 0.65 ✓

(c) After a decrease of 6% in weight, a person weighs 63 kg. Which of the following calculations would you use to find the weight of the person *before* the increase?

(a) $\frac{94 \times 63}{100}$ (b) $\frac{94 \times 100}{63}$ (c) $\frac{100 \times 63}{94}$ (d) $\frac{100 \times 63}{106}$ (e) $\frac{106 \times 63}{100}$ ✓

$63 = \frac{94}{100} \times w$ $w = \frac{100 \times 63}{94}$

7. [1, 1, ~~1 = 3~~ 2 marks]

Given that $S = \frac{D}{T}$ calculate:

(a) S, when D = 100 and T = 4

S = 25 ✓

(b) S, when D = 2 and T = 8

0.25 ✓

8

Name: _____ Date:_____

Baldivis Secondary College

Year 11 Applications

Test 1, 2020

Time:	30 minutes
Marks:	/31

Topics – Percentages, Rates, Substitution and Formulae

Total Time: **30** minutes

Weighting: 6% of the year

Equipment: **Resource Allowed – Calculators are permitted.**
SCSA Formula Sheet; 1 page notes (A4 one side, Unfolded)

1. [1, 1, 1, 2 = 5 marks]

a) Hannah scored 26 out of 34 in a test. Write this as a percentage correct to one decimal place.

$76.47 \approx 76.5\%$ ✓

b) Find 72% of $860.

$\$619.20 = 0.72 \times 860$ ✓

c) Increase $235 by 12%.

$1.12 \times 235 = \$263.20$ ✓

d) 27% of a town's population is under 18. If there are 3024 under 18s, what is the population of the town?

✓ ✓

$27\% = 3024$

$\frac{3024}{0.27} = 11200$ people

(5)

2. [3 marks]

A taxi driver charges a set fee of $3.90 and then $1.60 per km.

(a) Write down a formula for the cost, C, of a trip of *n* kilometres.

$C = 1.6n + 3.9$ ✓

(b) Use your formula to calculate the cost of a 20 kilometre trip.

$C = 1.6(20) + 3.9$ ✓ 1 mark n=20

$C = \$35.90$ ✓ 1 mark answer

3. [1, 1, 3 = 5 marks]

(a) An electronics store increased the prices of all laptops by 8%. A laptop originally cost $995. What was the new price of the laptop after the price increase?

$995 \times 1.08 = \$1074.60$ ✓

(b) During the end of year sales, all stock was now discounted by 10%. What is the price of the laptop during the end of year sales?

$1074.6 \times 0.9 = \$967.14$ ✓

(c) Calculate the overall percentage change in price from the original price

$$\frac{\$967.14}{995.00} = 97.2\%$$ ✓ OR 2.8% ↓

or ✓ $\frac{995 - 967.14}{995} \times 100 = 2.8\%$

4. [2 marks]

The sum of n terms in an arithmetic sequence is defined by the formula $S = \frac{n}{2}(2a + (n-1)d)$.

Given that n=20, a = 5, and d= 8, find the value of S.

✓ Substitution

$S = \frac{20}{2}(2 \times 5(20-1) \times 8)$ $S = \frac{20}{2} \times (2 \times 5 + (20-1)8)$

$S = 15200$

$= 10(162)$

$= 1620$ ✓ answer

5. [3 marks]

Fruits and vegetables do not incur GST. If the total shopping bill is $107 including GST, and fruits and vegetables amount to $72, what is the cost of the other items prior to adding GST? Give your answer correct to two decimal places.

$107 - 72 = 35$ ~~= $31.82~~

$\frac{35}{1.1} = \$31.82$

6. [1, 1, 1, 2 = 5 marks]

Gustavo imports pottery from Europe. He buys a shipment of pottery for AUD 15 700. The exchange rate with the Australian dollar at the time was EUR 0.8143.

a) How much did it cost him in Euros?

$\frac{15\,700}{0.8143} = €12,784.51$

b) The shipping costs were EUR 735. How much is this equivalent to in Australian dollars

$\frac{€735}{0.8143} = \$902.62$

c) Calculate the total cost, in AUD, of importing the pottery.

$15\,700 + 902.62 = \$16602.62$

d) Gustavo wants to make a 60% profit. How much will he need to sell the shipment for?

$1.6 \times 16602.62 = \$26564.19$

8

7. [2 marks]

In a room with n people there are H different possible handshakes.

If $H = \frac{n(n-1)}{2}$, find the number of people in a room if there were 276 possible handshakes.

Working ✓ Answer ✓

$276 = \frac{n(n-1)}{2}$ $n = 24$ by numsolve on Classpad

8. [2, 2 = 4 marks]

Sara sells cars. She is paid a retainer of \$40 000 a year and earns a 20% commission **on the profit** made on the sale of each car sold.

The car dealership where she works bought a Jeep for \$21 000 wholesale.

(a) Sara sold the Jeep for \$32 500. What commission did Sara earn on the sale of the Jeep?

$32500 - 21000 = 11500 \times 0.2 = 2300$ ✓

$11500 \times 0.2 = \$2300$ ✓

(b) Sara would like to earn \$64 000 a year. How many similar sales would she need to make in a year to achieve this figure?

$\frac{24000}{2300}$ ✓ $= 10.43 \approx 11$ sales ✓

6