Name: _____ Date: _____

Baldivis Secondary College

Year 11 Applications

Test 1, 2019

Time:	40 minutes
Marks:	/37

Topics – Percentages, Rates, Substitution and Formulae

Total Time: **40** minutes

Weighting: 5% 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.

$\frac{26}{34} \times 100 = 76.470$

$= 76.5\%$. (1dp)

b) Find 72% of $860.

0.72×860

$= \$619.20$ must have 2dp.

c) Increase $235 by 12%.

0.88×235

$= \$206.80$ must have 2dp.

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

$\times 3.7037$ ($27\% = 3024$; $100\% = 11200$) $\times 3.7037$

The town's population is 11200 people.

2. [3 marks]
George, Annie's brother, runs a hardware store. To sell a lawn mower that he has had in the store for 3 years he decides to sell it at a 15% discount. George sells the lawn mower for $350. What was the original price for the mower?

85% = 350
100% = 411.74
x 1.1764 (↓) x 1.1764

$411.74 is the original price.

3. [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.

$C = (1.60n) + 3.90$

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

$C = (1.60 \times 20) + 3.90$
$= \$35.90$ is the cost for a 20km trip.

4. [1, 1, 3 = 5 marks]
(a) An electronics store increased the prices of all laptops by 7%. A laptop originally cost $995. What was the new price of the laptop after the price increase?

995×1.07
$= \$1064.65$ is the new price.

(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?

0.90×1064.65
$= \$958.19$

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

% change $= 995 - 958.19$
$= \$36.81$

$\frac{36.81}{995} \times 100 = 3.7\%$ change.

Name: _____ Date: _____

Baldivis Secondary College

Year 11 Applications

Test 1, 2019

Time:	15 minutes
Marks:	/14
Total Marks:	/51

Topics – Percentages, Rates, Substitution and Formulae

Total Time: **15** minutes

Weighting: 5% of the year

Equipment: **Resource Free – Calculators are not permitted.**
SCSA Formula Sheet; 1 page notes (A4 one side, Unfolded)

1. [1, 3 = 4 marks]

a) Find 10% of $220

220.
= $22

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

(i) 1% of $220

220.
= $2.20

(ii) 5% of $220

10% = $22
∴ 5% = $11

(iii) 8% of $220

1% = $2.20

8% 2.20
×8
$17.60

8% $17.60

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?

$$F = \frac{9 \times 5}{5} + 32$$

$$= \frac{45}{5} + 32$$

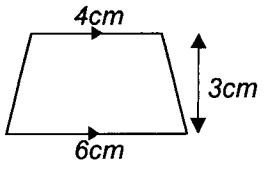
$$= 9 + 32$$

$$= 41\,F$$

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:



$A = \frac{4+6}{2} \times 3$

$= \frac{10}{2} \times 3$

$= 5 \times 3$

$A = 15\text{cm}^2$

(b) If the area of a trapezium is 18 cm^2 and the perpendicular height is 3cm, give ONE possible combination of lengths of the parallel sides.

$A = \frac{a+b}{2} \times h$

$18 = \frac{a+b}{2} \times 3$

$18 \times 2 = a+b \times 3$

$\frac{36}{3} = a+b$

$12 = a+b$

Possible combinations: 1, 11
2, 10
3, 9 etc...

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) $\frac{106 \times 63}{100}$

as $\div 0.94$

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

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

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

$S = \frac{100}{4}$

$S = \underline{\underline{25}}$

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

$S = \frac{2}{8}$

$= \frac{1}{4}$ or 0.25

5. [2 marks]
Assuming that the annual rate of inflation remains steady at 3.19%, what would the value of an item be in two years' time if it costs $90 now?

Yr 1 0.0319×90
$= 2.87$
new value is $90 + 2.87$
$= \$92.87$

Yr 2 0.0319×92.87
$= 2.96$
new value is $92.87 + 2.96$
$= \$95.83$
The item will now be valued at $95.83.

6. [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.

$107 - 72$
$= \$35$ cost of items prior to GST.

$\frac{35}{1.10} = \$31.82$ (2dp).

7. [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.

$S = \frac{n}{2}(2a + (n-1)d)$

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

$S = 1620$

8. [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?

AUD : EUROS
1 : 0.8143
15700 : 12784.51
× 15700 ↓ ↓ × 15700

It will cost 12784.51 Euros

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

1 : 0.8143
902.62 : 735
× 902.62 ↓ ↓ × 902.62

It will cost +$902.62 AUD

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

15700 + 902.62
= $16602.62 AUD.

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

0.6 × 16602.62
= 9961.57

16602.62 + 9961.57
= $26564.19

9. [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.

24 - via numb Soft.

10. [3 marks]

* Not sure about this one??

Mikayla buys an item which she sells to Shania making a profit of 35%. Shania sells it to Henrietta for $5600 and makes a loss of 23%. How much did Mikayla pay for the item?

135 - 23 = 112%

÷1.12 (112 = 5600)
(100% = $5000) ÷1.12

Mikayla bought the dress for $5000

11. [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?

Profit = 32500 − 21000 = $11500

Commission = 0.2 × 11500
= $2300 is the commission she earned.

(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?

64000 − 40000
= $24000

She needs to make 1 more sale similar to the sale above.