Year 8 Mathematics

End Term 3

45 marks

40 mins
Date

Instructions: 1. Answer all questions   2. Calculators permitted

Question 1 (11 marks - 1 mark each)

a) Simplify the following ratios:

 i) 5 : 15   **ii)** 6 : 12   **iii)** 1.4 : 2.1   **iv)** 2.4s : 3.2s

b) The rose food is mixed with water in the ratio of 1 : 3. How much rose food is needed to make a mixture of 2 L?

c) Calculate each of the following: **i)** 15% of 40 **ii)** $37\frac{1}{2}$% of 80

d) Add GST (10%) to the price of each of the following items:

 i) A phone @ $125 **ii)** A magazine @ $8.45

e) A prepaid mobile phone deal offers 29c per text message, what would be the charge for 83 text messages?

f) Which is the best buy:

 $12.45 for 500 g of chocolate or $15.05 for 750 g?

Sample 1

Question 2 (14 marks)

a) Write a function for the pattern in the following table:

x	1	2	3	4	5	10	20
y	4	7	10	13	16	31	61

(1)

b) For each of the following, use the function to complete the table, and then graph the function.

x	1	2	3	4	5	10	20
y = 3x − 2	1	4					

(2)

c) Solve each of the following equations:

 i) a + 5 = 7   **ii)** b − 3 = 9   **iii)** 5x = 15

 iv) 3(x − 2) = 12   **v)** 3(y + 3) = 30   **vi)** 2x + 3 + 5x = 24

 vii) 2(x − 3) + 4x = 18   **ix)** 4t − 3 = 2t + 7   (1 each)

d) For the social it will cost $150 to hire the room and each ticket will cost $25.

 i) Write a function for profit for the social.

 ii) What will be the profit if 32 people attend the social?

 iii) If the profit is $525, how many people attended the social?   (1 each)

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Question 3 (9 marks)

a) An opinion poll concludes that: "47% supported the Government's position on environmental protection and 53% opposed the Government's position." Why should the opinion poll also report the sample size and the method of sampling? (1)

b) Find the mean, median, and range of each of the following sets of data:

i) 3, 3, 3, 4, 5, 7, 9   ii) 1.4, 1.5, 1.5, 1.6, 1.9   (2 each)

c) 46 students in a random sample of 75 students have a part-time job. Estimate the number of students in the school of 1730 with a part-time job. (1)

d) A randomly selected sample of 900 households suggests that 146 of the households regularly watch a sporting segment. Estimate the number of households, from the population of 6 million households, that regularly watch the sporting segment. (1)

e) A stratified sample helps avoid bias because each member of a section of the population has an equal chance of being selected in the sample. How many students from each Year level of the following school should be randomly selected in a sample size of 90 students?

Year	Number
7	120
8	120
9	110
10	100

(2)

Question 4 (11 marks - 1 each)

a) What is the time 1 hours 35 minutes after 9:20 am?

b) How much time between 8:05 am and 4:30 pm?

c) Kale leaves home at 7:15 am and takes 10 mins to walk to the bus station. He waits 5 mins for the bus and the bus takes 50 mins to travel to his workplace. At what time does Kale get to work?

d) Convert the following 12-hour times to 24-hour time:
   i) 3:19 am   ii) 10:23 pm

e) Convert the following 24-hour times to 12-hour time:
   i) 0812   ii) 1146

Australia has 3 time zones.

Western	Central	Eastern
EST−2hrs	EST−30mins	EST
Perth	Darwin Adelaide	Brisbane Sydney Camberra Melbourne Hobart
7:00 am	8:30 am	9:00 am

f) If the time in Darwin is 9 pm, what is the time in
   i) Adelaide?   ii) Canberra?   iii) Hobart?

g) Given the following Flight Review, how long is the flight?

DEPARTING	ARRIVING	FLIGHT	BAGGAGE
Brisbane	Adelaide	AL 4	23 kg
8:35 AM	1:05 PM	Economy	

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Question 1 (11 marks - 1 mark each)

a) Simplify the following ratios:

i) 4 : 8   **ii)** 6 : 15   **iii)** 0.2 : 1.2   **iv)** 0.5a : 1.5a

b) The concrete is to be made of cement, sand, and gravel in the ratio of 1 : 2 : 3.
If the mixer takes 30 shovelfulls, how many shovelfulls of sand is needed?

c) Calculate each of the following: **i)** 20% of 60   **ii)** $62\frac{1}{2}$% of 80

d) Add GST (10%) to the price of each of the following items:

i) A pie @ $5   **ii)** A bag of chips @ $4.20

e) A prepaid mobile phone deal offers 43c per 30 seconds,
what would be the charge for a 3 min call?

f) Which is the best buy:

$2.45 for 750 mL of fruit juice or $4.85 for 2 L?

Sample 2

Question 2 (14 marks)

a) Write a function for the pattern in the following table:

x	1	2	3	4	5
y	2	7	12	17	22

(1)

b) For each of the following, use the function to complete the table,
and then graph the function.

x	1	2	3	4	5	10	20
y = 3x − 2	1	4					

(2)

c) Solve each of the following equations:

i) x + 3 = 7   **ii)** c − 7 = 9   **iii)** 5t = 20

iv) 4(x − 2) = 12   **v)** 3(x + 2) = 15   **vi)** 5x + 3 + 2x = 24

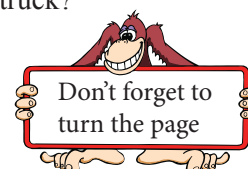**vii)** 3(x − 3) + 6x = 18   **viii)** 5a − 3 = 3a + 5   (1 each)

d) The truck has a weight of 3.5 tonnes and each pallet weighs 0.3 tonnes.

a) Write a function for the total weight of the truck.

b) What is the total weight if the truck carries 8 pallets?

c) If the total weight is 5.3 tonnes, how many pallets were put on the truck?   (1 each)

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Question 3 (9 marks)

a) An opinion poll concludes that: "52% supported the Government's position on environmental protection and 48% opposed the Government's position." Why should the opinion poll also report the sample size and the method of sampling? (1)

b) Find the mean, median, and range of each of the following sets of data:

   i) 5, 5, 7, 8, 8, 9   **ii)** 3.4, 3.4, 3.4, 3.6, 3.9, 3.9   (2 each)

c) 32 students in a random sample of 50 students have brown eyes.
Estimate the number of students in the school of 1030 with brown eyes. (1)

d) A randomly selected sample of 900 households suggests that 153 of the households regularly watch a cooking segment. Estimate the number of households, from the population of 6 million households, that regularly watch the cooking segment. (1)

e) A stratified sample helps avoid bias because each member of a section of the population has an equal chance of being selected in the sample. How many students from each Year level of the following school should be randomly selected in a sample size of 60 students? (2)

Year	Number
7	130
8	130
9	120
10	120

Question 4 (11 marks - 1 each)

a) What is the time 2 hours 15 minutes after 5:30 am?

b) How much time between 8:45 am and 3:10 pm?

c) Rachel leaves home at 7:05 am and takes 10 mins to walk to the bus station. She waits 10 mins for the bus and the bus takes 45 mins to travel to her workplace. At what time does Rachel get to work?

d) Convert the following 12-hour times to 24-hour time:

   i) 5:45 am   **ii)** 11:03 pm

e) Convert the following 24-hour times to 12-hour time:

   i) 0933   **ii)** 1514

Australia has 3 time zones.

Western	Central	Eastern
EST−2hrs	EST−30mins	EST
Perth	Darwin Adelaide	Brisbane Sydney Camberra Melbourne Hobart
7:00 am	8:30 am	9:00 am

f) If the time in Brisbane is 9 pm, what is the time in

   i) Melbourne?   **ii)** Sydney?   **iii)** Perth?

g) Given the following Flight Review, how long is the flight?

DEPARTING	ARRIVING	FLIGHT	BAGGAGE
Perth	Canberra	DF 16	20 kg
5:05 PM	11:55 PM	Economy	

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