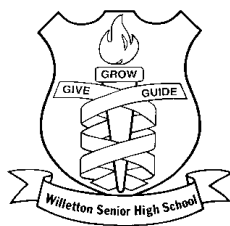


WILLETTON SENIOR HIGH SCHOOL



Year 11 Mathematics Applications

Test 4 – 2022

Calculator Free

Student's name: _____

Please circle your teacher's name:

Dr. Duan

Miss. Colquhoun

Mr. Stillitano

Mrs. Regi

Mr. Galbraith

Mr. Riemer

Section	Time Allocated	Marks
Calculator Free	30 minutes	44

Formula sheet allowed

No calculators or notes permitted.

Answer all questions in the space provided.

Show working to receive full marks.

QUESTION 1 (2, 3, 3 = 8 marks)

Solve the following equations, showing working where required

a) $2(1 - x) = 3$

b) $3(1 - x) = -3(4x - 5) - 3x$

c) $\frac{x}{3} - \frac{1-x}{2} = 2$

QUESTION 2 (3 marks)

Willetton SHS and Rossmoyne SHS both had students who participated in one year's National Mathematics Competition. There were 56 students who won a prize among these two schools, but Willetton had 6 more winners than Rossmoyne. How many students won a prize in each school?

QUESTION 3 (4 marks)

Determine the equation of the line passing through points $(-2, 1)$ and $(3, -4)$.

QUESTION 4 (2, 2, 1, 1 = 6 marks)

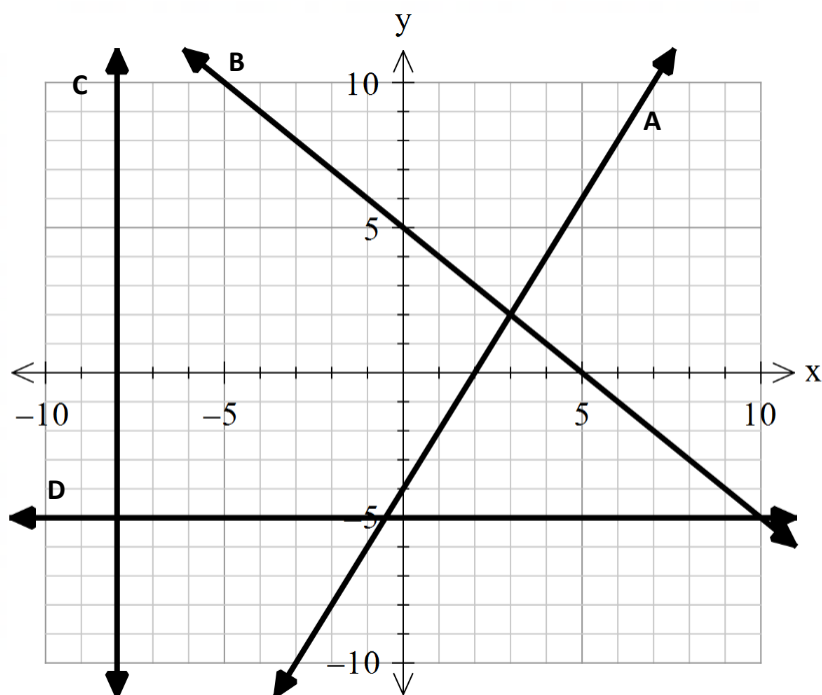
Write the equation of the lines graphed below.

A) _____

B) _____

C) _____

D) _____



QUESTION 5 (6, 1 = 7 marks)

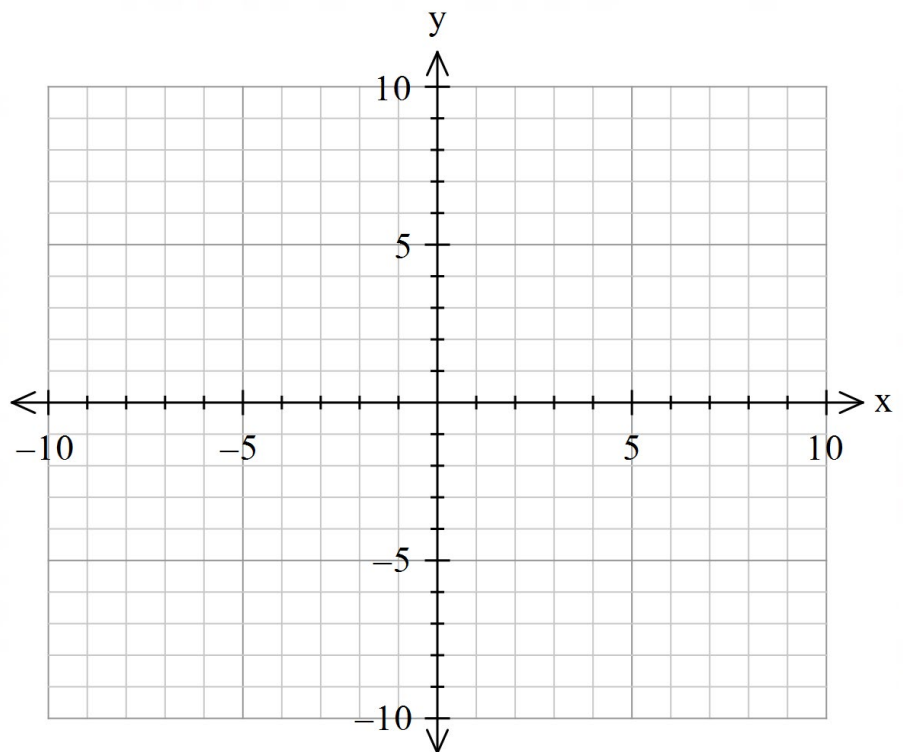
- a) On the axes below, draw each of the following straight-line graphs with the given information. (Label each straight line drawn with the given letter)

A: $y = 3x + 1$

B: $2x + y + 4 = 0$

C: The line has a gradient of $-\frac{4}{3}$ and goes through $(-3, 5)$

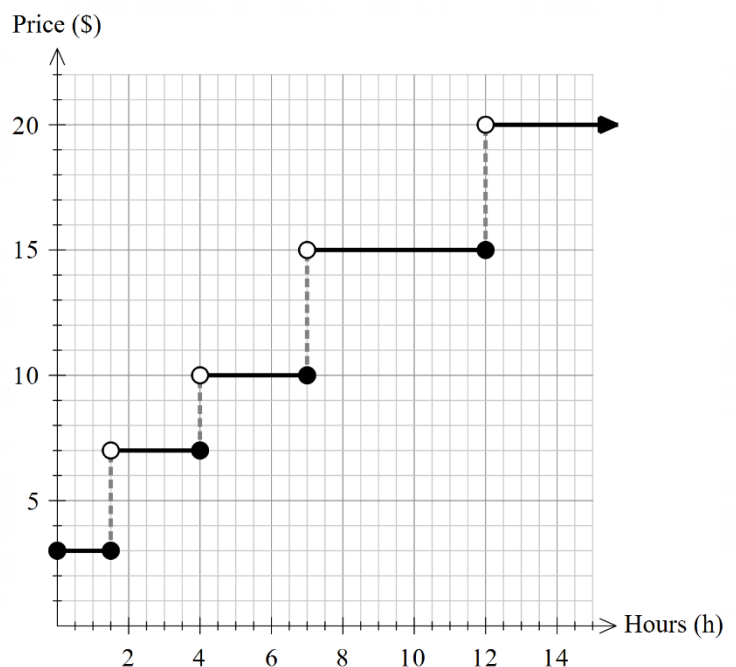
- b) Find the solution that satisfies both A and B



QUESTION 6 (1, 1, 2 = 4 marks)

The graph shows the parking costs (in dollars) over different lengths of time:

- a) How much would 3 hours of parking cost?
- b) What is the longest time that you can park for \$15?
- c) The carpark offers a weekly pass for \$70. If Mr. Stillitano parks his car for 8 hours each day, five days a week, how much would he save each week with the weekly pass?



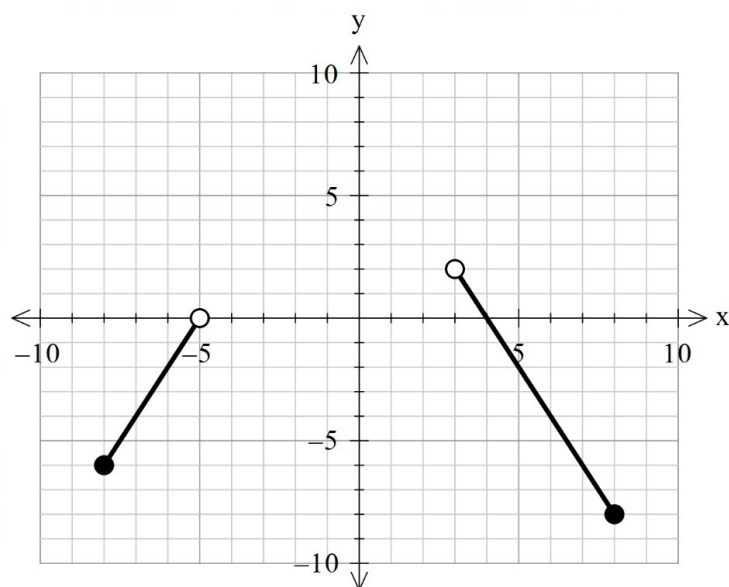
QUESTION 7 (4 marks)

Solve the following pair of simultaneous linear equations algebraically.

$$\begin{cases} 2x - 3y = 5 \\ x - 2y = 2 \end{cases}$$

QUESTION 8 (8 marks)

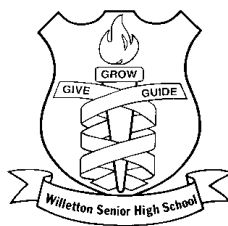
Complete the following statements for the piecewise defined function shown below and **complete the graph**.



$$y = \begin{cases} \text{---} & \\ x + 7 & , \quad -5 \leq x < 0 \\ 3 & , \quad 0 \leq x \leq 3 \\ \text{---} & \end{cases}$$

END OF CALCULATOR FREE

WILLETTON SENIOR HIGH SCHOOL



Year 11 Mathematics Applications

Test 4 – 2022

Calculator Assumed

Student's name: _____

Please circle your teacher's name:

Dr Duan

Miss. Colquhoun

Mr Stillitano

Mrs. Regi

Mr Galbraith

Mr. Riemer

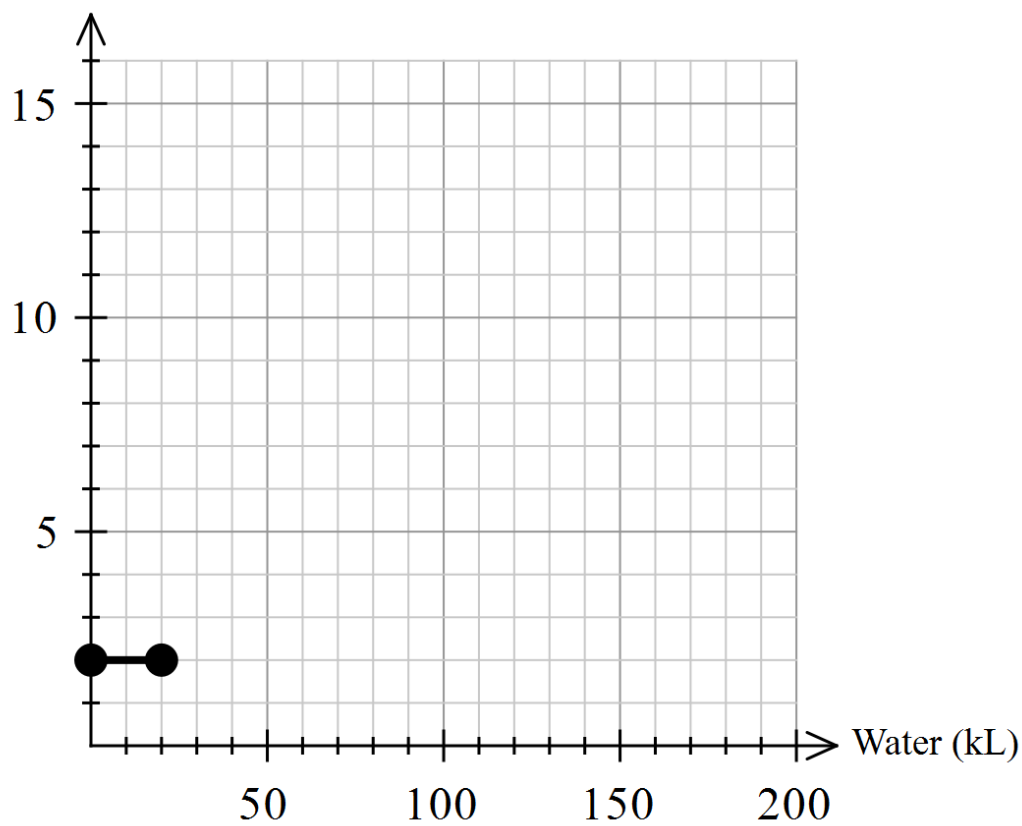
Section	Time Allocated	Marks
Calculator Assumed	20 minutes	20

Calculators and Classpads allowed.
Formula sheet allowed
One side of A4 page of notes allowed.
Show working to receive full marks.

QUESTION 9 (3, 2, 3 = 8 marks)

The Water Corporation charges \$2 / kL for the first 20 kL of water used, \$4 / kL for the next 50 kL, and \$8 / kL for the following 100 kL. For any volume of water over 170kL, it costs \$15 / kL.

Price (\$/kL)

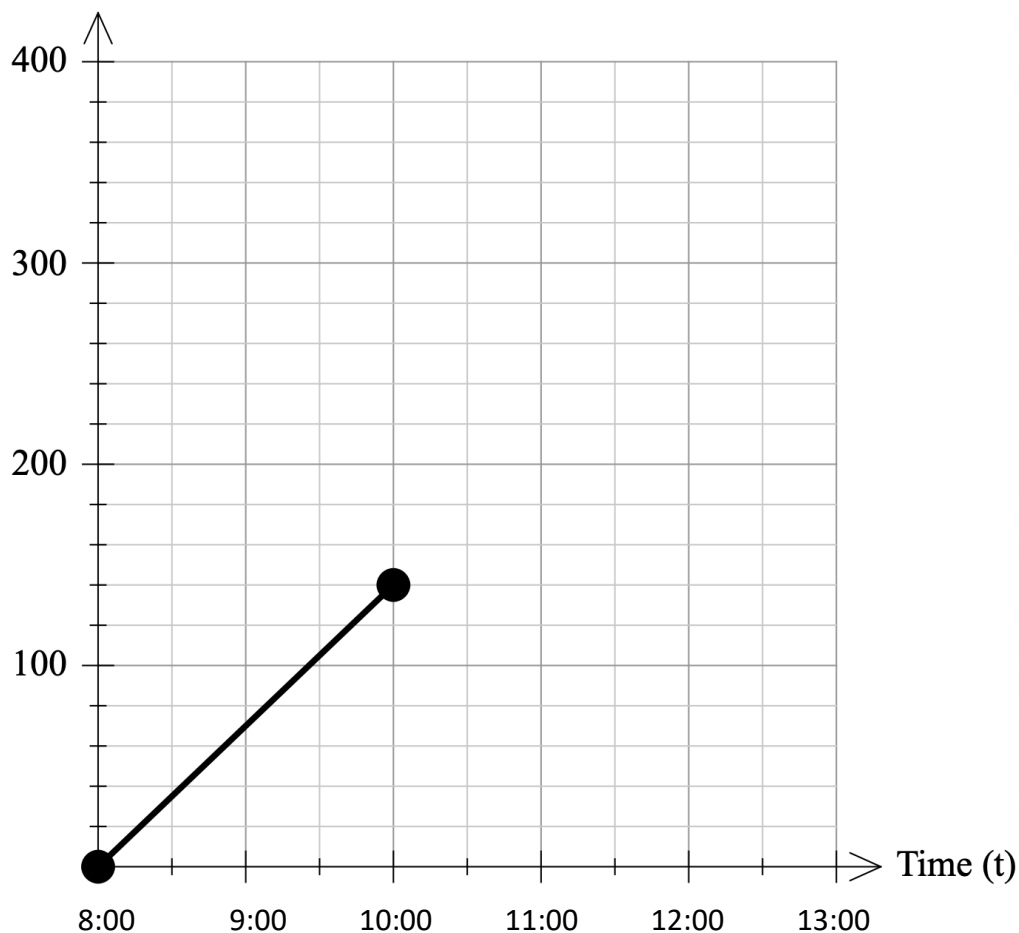


- a) On the axes above, complete the step graph to show the charges for water usage.
- b) i) In the last water bill, Mr. Riemer used 90 kL water, how much did he have to pay for his total water bill?
- ii) After this last water bill, his water budget for the next month is \$500. What is the most amount of water that he can use in this month? (Round your answer to whole kL).

QUESTION 10 (2, 1, 2, 3 = 8 marks)

Mr. Galbraith drove his caravan to Albany for a holiday. He left at 8:00am in the morning, with an average speed of 70 km/hr. After two hours, he pulled over and rested for 30 mins, and then he started again but with an average speed of 80 km/hr. At 9:30am, an EMS (Express Mail Service) car left Perth, and also headed to Albany via the same route as Mr. Galbraith, with an average speed of 110km/hr.

Distance from Perth in km (d)



- On the axes above, complete the 'Time and Distance' graph for Mr. Galbraith.
- On the axes above, draw the Time and Distance graph for the EMS car.
- Determine **graphically** at what time and how far from Perth the EMS car will overtake Mr. Galbraith's car?
- State the equation for the EMS car.

QUESTION 11 (4 marks)

Old MacDonald had a farm. He put chickens and rabbits in the same cage and counted 35 heads, and 94 feet. Show a pair of equations and therefore, find out how many chickens and rabbits were there in the cage?

END OF THE TEST