Weekly Review #1 **Name: _____**

SHOW ALL WORK

1. Given $p = x - \frac{\sqrt{y}}{z}$, $x = 1.775$, $y = 1.44$ and $z = 48$,

(a) calculate the value of p.

(2)

Barry **first** writes x, y and z correct to one significant figure and **then** uses these values to estimate the value of p.

(b) (i) Write down x, y and z each correct to one significant figure.

(ii) Write down Barry's estimate of the value of p.

(2)

(c) Calculate the percentage error in Barry's estimate of the value of p.

(2)
(Total 6 marks)

2. (a) List the elements of the set $A = \{x \mid -4 \leq x \leq 2, x \text{ is an integer}\}$.

(1)

A number is chosen at random from set *A*.

Write down the probability that the number chosen is

(b) a negative integer;

(2)

(c) a positive even integer;

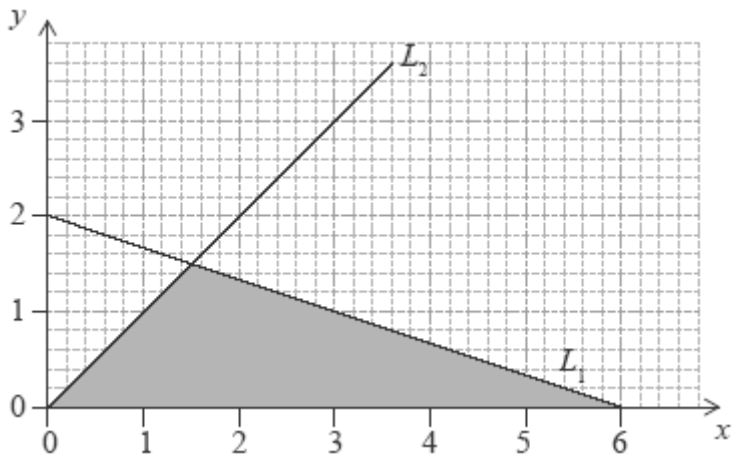
(1)

(d) an odd integer less than –1.

(2)

(Total 6 marks)

3. The diagram shows the straight lines L_1 and L_2. The equation of L_2 is $y = x$.



(a) Find

(i) the gradient of L_1;

(ii) the equation of L_1.

(3)

(b) Find the area of the shaded triangle.

(3)

(Total 6 marks)

4. The equation of the line R_1 is $2x + y - 8 = 0$. The line R_2 is perpendicular to R_1.

(a) Calculate the gradient of R_2.

(2)

The point of intersection of R_1 and R_2 is $(4, k)$.

(b) Find

(i) the value of k;

(ii) the equation of R_2.

(4)
(Total 6 marks)

5. The seventh term, u_7, of a geometric sequence is 108. The eighth term, u_8, of the sequence is 36.

(a) Write down the common ratio of the sequence.

(1)

(b) Find u_1.

(2)

The sum of the first k terms in the sequence is 118 096.

(c) Find the value of k.

(3)
(Total 6 marks)

6. U is the set of all the **positive** integers less than or equal to 12.
A, B and C are subsets of U.

$A = \{1, 2, 3, 4, 6, 12\}$
$B = \{\text{odd integers}\}$
$C = \{5, 6, 8\}$

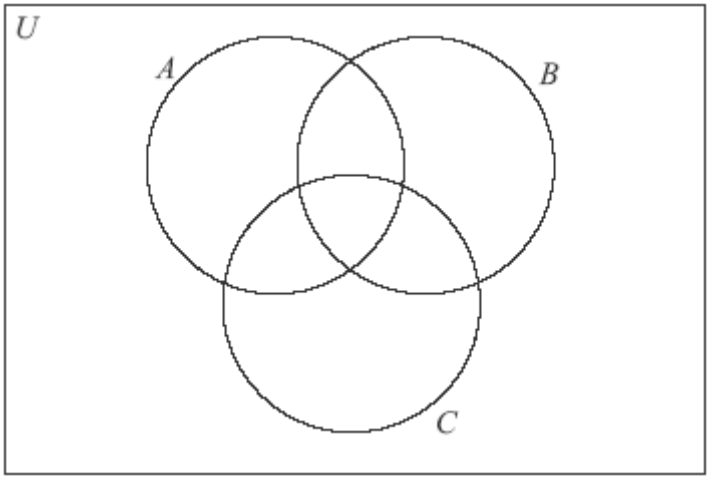
(a) Write down the number of elements in $A \cap C$.

(1)

(b) List the elements of B.

(1)

(c) Complete the following Venn diagram with **all** the elements of U.



(4)
(Total 6 marks)

7. 10 000 people attended a sports match. Let x be the number of adults attending the sports match and y be the number of children attending the sports match.

(a) Write down an equation in x and y.

(1)

The cost of an adult ticket was 12 AUD. The cost of a child ticket was 5 AUD.

(b) Find the total cost for a family of 2 adults and 3 children.

(2)

The total cost of tickets sold for the sports match was 108 800 AUD.

(c) Write down a second equation in x and y.

(1)

(d) Write down the value of x and the value of y.

(2)

(Total 6 marks)

8. A manufacturer in England makes 16 000 garden statues. 12 % are defective and cannot be sold.

(a) Find the number of statues that are non-defective.

(2)

The manufacturer sells each non-defective statue for 5.25 British pounds (GBP) to an American company. The exchange rate from GBP to US dollars (USD) is 1 GBP = 1.6407 USD.

(b) Calculate the amount in USD paid by the American company for all the non-defective statues. Give your answer correct to **two decimal places**.

(2)

The American company sells one of the statues to an Australian customer for 12 USD.
The exchange rate from Australian dollars (AUD) to USD is 1 AUD = 0.8739 USD.

(c) Calculate the amount that the Australian customer pays, in AUD, for this statue.
Give your answer correct to **two decimal places**.

(2)
(Total 6 marks)

9. Shiyun bought a car in 1999. The value of the car V, in USD, is depreciating according to the exponential model

$$V = 25\,000 \times 1.5^{-0.2t},\ t \geq 0,$$

where t is the time, in years, that Shiyun has owned the car.

(a) Write down the value of the car when Shiyun bought it.

(1)

(b) Calculate the value of the car three years after Shiyun bought it. Give your answer correct to **two decimal places**.

(2)

(c) Calculate the time for the car to depreciate to half of its value since Shiyun bought it.

(3)

(Total 6 marks)

10. In the diagram, $B\hat{A}C = 90°$. The length of the three sides are x cm, $(x + 7)$ cm and $(x + 8)$ cm.

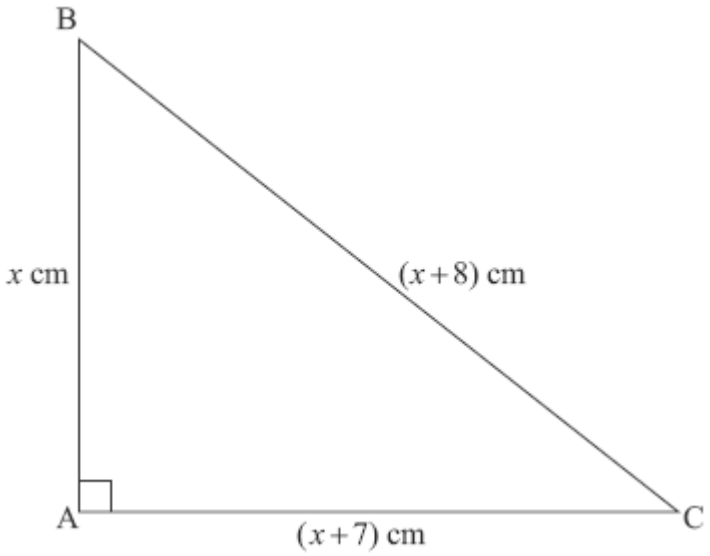


diagram not to scale

(a) Write down and **simplify** a quadratic equation in x that links the three sides of the triangle.

(3)

(b) Solve the quadratic equation found in part (a).

(2)

(c) Write down the value of the perimeter of the triangle.

(1)

(Total 6 marks)