KASLER

Kastelan & Samways Learning & Educational Resources

PRACTICE PAPER 1 SCHOOL CERTIFICATE TEST

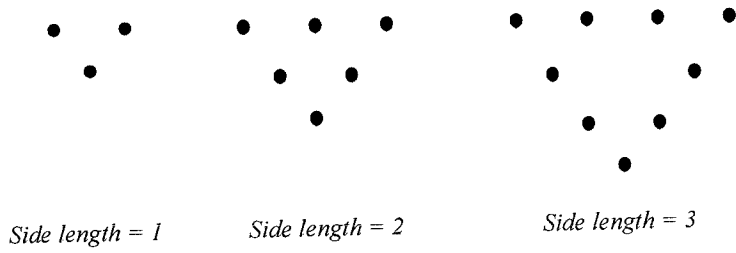## MATHEMATICS

SECTION 2

Part B

NAME

_____

Directions for Section 2–Part B

1. You have 90 minutes to answer Section 2 Part A and Part B

2. • Part B   Questions 76-80   (25 marks)

    • Allow about 30 minutes to answer this part

3. Calculators may be used in Section 2

4. • Do NOT write in pencil

5. Write your NAME at the top of this page

Question 76 (5 marks)

Side length = 1   *Side length = 2*   *Side length = 3*

The diagram shows triangles whose side lengths increase by one unit from each previous triangle.
The number of dots in each diagram forms the pattern

$$3, 6, 9, \ldots$$

(a)   Draw the next shape in the pattern.

(b)   Complete the sentence to describe the pattern in words:

The number of dots in a triangle is given by...

....

(c)   How many dots would there be in a triangle that has a side length of 12 units?

....

(d)   How many dots are needed for a triangle whose side length measures x units?

....

(e)   Given that all of the triangles are equilateral triangles, calculate the area of the triangle that has a perimeter of 24 units (Answer to 1 decimal place) .

....

....

....

Question 77 (5 marks)

Weights (kg)

```
4 | 6 7
5 | 0 3 4 6 6 8 9
6 | 4 5 7 9
7 | 0 1 4 7 9
8 | 2 ☐
```

The stem-and-leaf plot displays the weights of 20 students in a team.

(a)   One entry (shown by ☐) is missing.

What is the missing entry given that the range is 39 kilograms?

....

(b)   What is the median weight of these team members?

....

(c)   Explain why the mode is 56 kilograms.

....

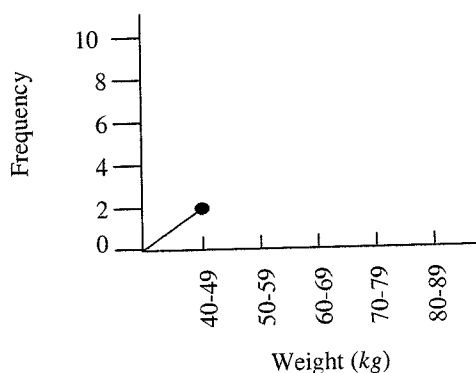..

(d)   If a team member was chosen at random, what is the probability that their weight would be less than 60 kilograms?

....

(e)   Complete the frequency polygon below to represent the information from the stem-and-leaf plot.

FREQUENCY POLYGON

Weight (*kg*)

Question 78 (5 marks)

A hose filling up a pool can fill up 720 litres in one hour.

(a)   At this rate, what is the volume of water that would be in the pool after three hours?

....

(b)   What is the average amount of water filling up the pool per minute?

....

....

(c)   After how many minutes does the pool have 588 litres?

....

....

(d)   The pool is full after eight hours. If the pool were to be emptied AFTER it had been filled up completely, how long would it take if the pool drained at a rate of 150 litres per 10 minutes?
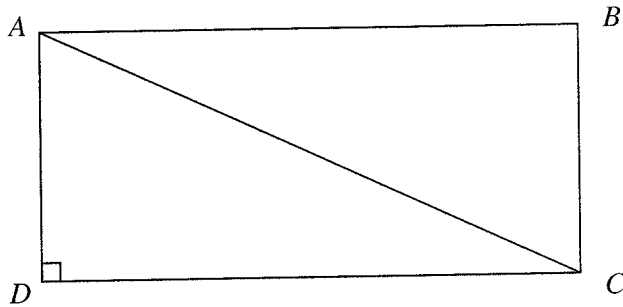
....

....

(e)   If water costs 82 cents per kilolitre, how much is the water charge for filling the pool?

....

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Question 79 (5 marks)

In the quadrilateral *ABCD*, *AD* = 7 cm, *AC* = 25 cm and $\angle ADC = 90°$.
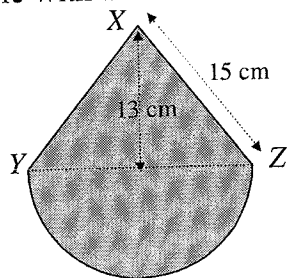

(a)   What type of shape is $\triangle ACD$?

....

(b)   Show that the length of *DC* is 24 cm.

....

....

....

....

Question 79 (continued)

(c)   A semicircle with diameter YZ is drawn on the equilateral triangle XYZ.

(i)   Write your answer A, B, C or D to the following in the space provided.

The area of the semicircle to the nearest square centimetre is

(A) 88 cm^2
(B) 177 cm^2
(C) 353 cm^2
(D) 707 cm^2

....

(ii)   Find the shaded area

....

....

....
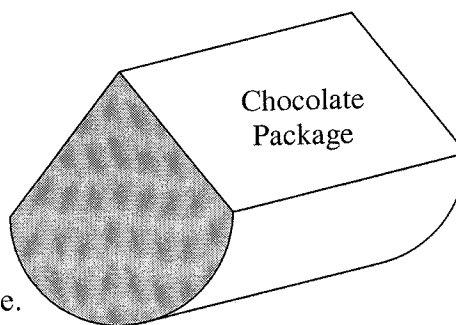
(d)   The shaded part of (c) represents one end of a chocolate bar package.

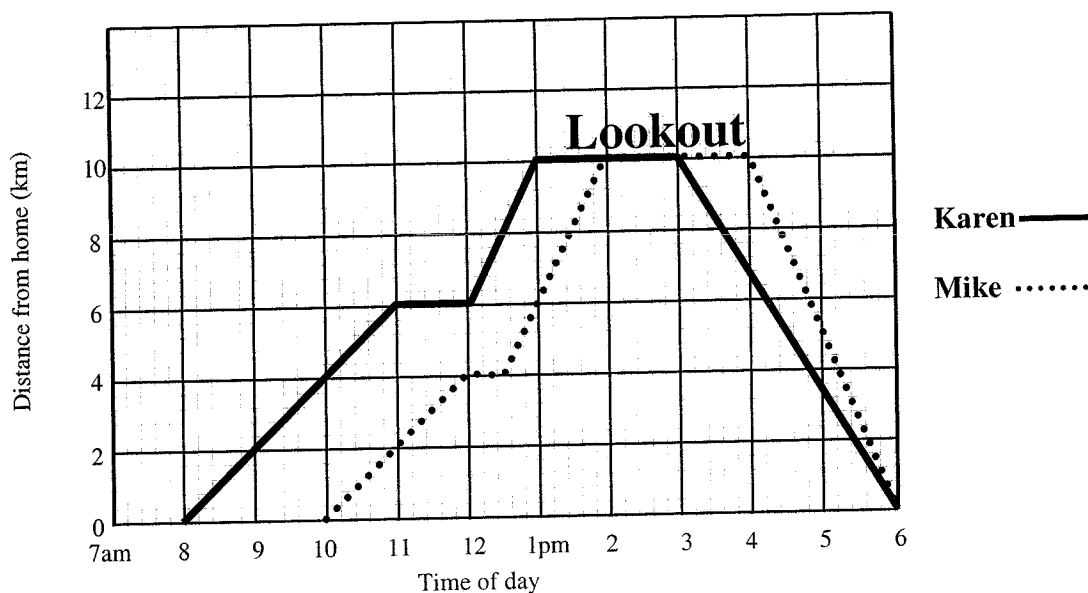The length of the package is 25 cm.

Calculate the volume of the chocolate package. Give your answer to the nearest cubic centimetre.

....

....

....

Question 80 (5 marks)

The graph represents Mike and Karen's bushwalk to Mt Cook lookout.

(a)   What is Mike's average speed for the first 2 hours of his trip?

....

(b)   Describe Karen's trip until she met up with Mike at the lookout.

....

....

....

(c)   How long were Mike and Karen at the lookout *together* for?

....

(d)   A time period when Mike is travelling faster than Karen is from

....   to   ....