KASLER

Kastelan & Samways Learning & Educational Resources

NAME

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PRACTICE PAPER 3 SCHOOL CERTIFICATE TEST

MATHEMATICS

SECTION 2

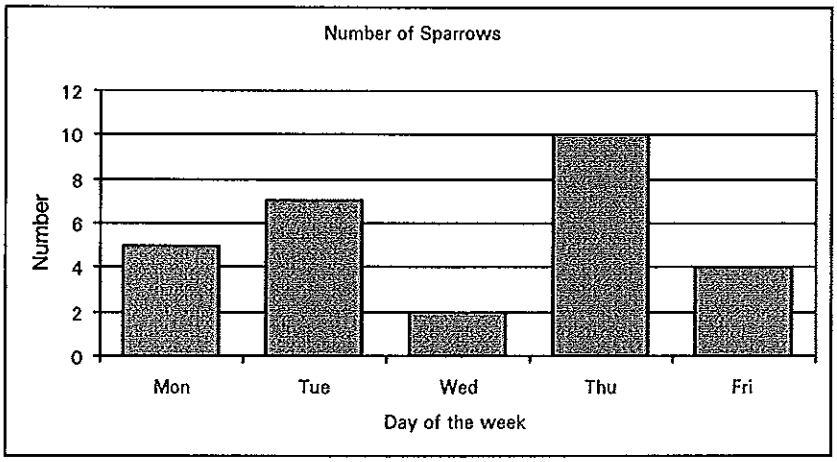
Part B

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)

Karla has been keeping a count of the number of sparrows that visit her garden each day.



(a) How many sparrows did Karla see altogether?

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(b) What day had the highest frequency of sparrows?

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(c) What is the average number of sparrows that Karla saw during the week?

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(d) What percentage of the total was seen on Monday? Give your answer to 1 decimal place.

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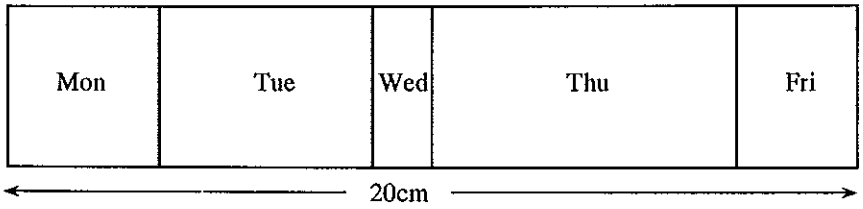
(e) Karla wants to graph her information on a bar chart 20cm long. What length would be used to represent Wednesday?



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Question 77 (5 marks)
Nick has entered a 50km bicycle race over hilly terrain.

(a) In the first 80 minutes he covers 40 km.What is his average speed in km/h?

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(b) How long does the race take for Nick if he maintains his average over the last 10km?

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(c) Sacha was able to ride at an average speed of 36 km/h. How many minutes and seconds did it take for Sacha to complete the race?

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(d) Carlos averaged 50 km/h for the first 25 km, but he slowed down after a fall from his bike. His time for finishing was exactly 2 hours. What speed did he average over the second 25km?

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(e) The first 5 finishing times in the race are as follows:

Place	Time *(h:min:s)*
1st	1:12:34
2nd	1:12:38
3rd	1:14:15
4th	1:14:51
5th	1:14:52

What is the average time for the first 5 cyclists?

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Question 78 (5 marks)

Hot cakes are made up of 3% Dietry Fibre, 6% fat, 8% Protein, 10% sugar and 73% carbohydrate by weight. A serving of hot cakes weighs 150g.

(a) A serving of hot cakes uses 75g of hot cake mix, one 55g egg and 45g of milk. What percentage of the weight is lost during the cooking process?

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(b) How many servings can be made from a 500g packet of hot cake mix?

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(c) How many grams of fat are in a serving of hot cakes?

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(d) Hot cakes supply 2280 kilojoules of energy. A growing teenager requires about 17 000 kilojoules of food each day. How many complete servings of hot cakes is needed to supply enough energy for the day?

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(e) A 60 watt electric light bulb uses 216 kilojoules per hour. How many light bulbs would use the same energy as a growing teenager each day? Give your answer to 1 decimal place.

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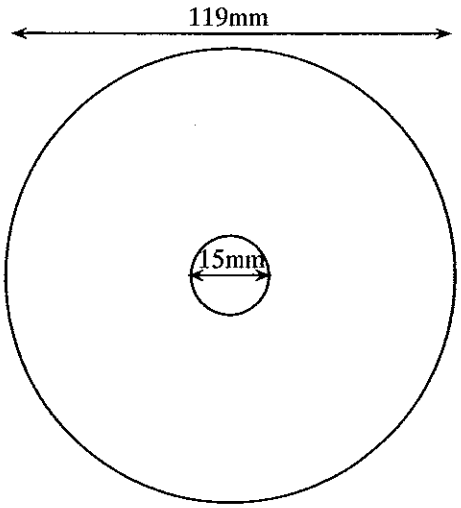
Question 79 (5 marks)

CD's are formed in a press that heats and squashes a piece of plastic (called a biscuit) into the shape of a CD. The biscuit is made to contain the right amount of plastic or else there is too much wastage.



(a) A CD is a circular disc that is 119mm in diameter and is 1mm thick. The centre hole is 15mm in diameter.
Show the volume of plastic needed to make 1 CD is 10 945mm^3 of plastic.

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(b) What is 10 945mm^3 in cubic centimetres?

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(c) The plastic biscuits are small rectangular prisms measuring 2·5cm × 2·5cm × 2cm. What is the volume of 1 plastic biscuit ?

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(d) The excess plastic is trimmed off the CD and then recycled. What volume of plastic is recycled during a run of 5350 CD's?

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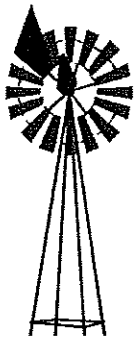
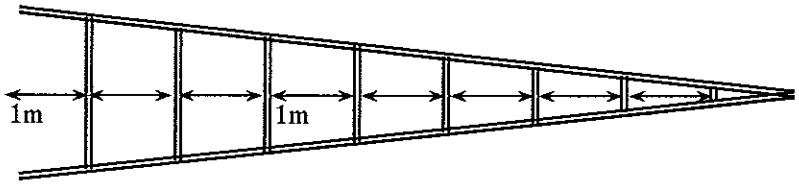
Question 80 (5 marks)

A windmill is made by joining 2 triangular structures together at the top. Each structure is braced at 1m intervals as shown in the diagram below. There is no bracing at the bottom or at the top.





(a) Complete the table below that compares the length of a structure to the number of braces needed.

Length (l)	1	2	3	4	5	6
Number of braces (b)	0	1				

(b) How many braces are needed for a triangular structure 12m long?

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(c) What is the rule that relate the length (l) to the number of braces (b)?

l = ...

(d) Each windmill uses 4 sets of bracing when fully constructed. The length of the bracing needed can be found by the formula:

$$\text{brace length} = 0{\cdot}4h^2$$

What is length of bracing is needed for a structure 12m long?

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(e) The cost of steel for the bracing is \$3·48 per metre. How much will the bracing in part (d) cost if 10% is allowed for wastage.

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End of test