

BOARD OF STUDIES  
NEW SOUTH WALES

**1998  
SCHOOL  
CERTIFICATE  
EXTERNAL  
TEST**

**17 November**

**MATHEMATICS**

**SECTION 2**

**PART A  
QUESTION  
& ANSWER  
BOOKLET**

**CENTRE NUMBER**

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**STUDENT NUMBER**

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**Directions for Section 2 – Part A**

- You have 90 minutes to answer ALL of Section 2
  - You should allow about 60 minutes to answer Part A and 30 minutes to answer Part B
- Section 2 has TWO Parts  
Part A: Questions 26–75 (50 marks)  
Part B: Questions 76–80 (25 marks)
- Attempt ALL questions in Section 2
- Calculators may be used in Section 2
- The Sample Questions & Formulae Booklet may be used in Section 2
- Complete your answers to Questions 26 to 73 on the separate Answer Sheet
  - Complete your answers to Questions 74 and 75 in this booklet
- Write your Centre Number and Student Number at the top of this page

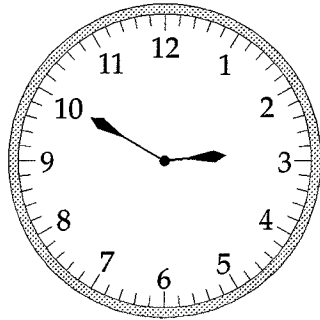
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26. Evaluate  $\sqrt{(2.4)^2 + (4.5)^2}$

27. What is the greatest number of 45 cent stamps that can be bought with \$20?

28. What fraction when added to  $\frac{1}{4}$  gives  $\frac{1}{3}$  ?

29.



The clock shows the time at which a train left Sydney.  
It arrived in Gosford after 1 hour and 35 minutes.

At what time did it arrive?

30. The cost of framing a photograph is found using the formula

$$C = (l + b) \times 0.55$$

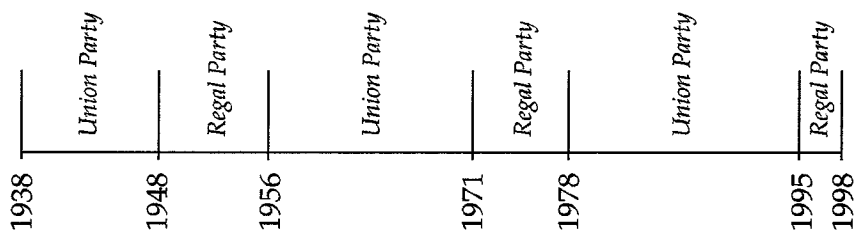
where  $l$  = length in centimetres

$b$  = breadth in centimetres

$C$  = cost in dollars.

Find the cost of framing a photograph whose dimensions are 8 cm by 6 cm.

31.



The time line shows the party in government in a country from 1938 to 1998.

Which of the following is closest to the percentage of time the *Regal Party* has been in government from 1938 to 1998?

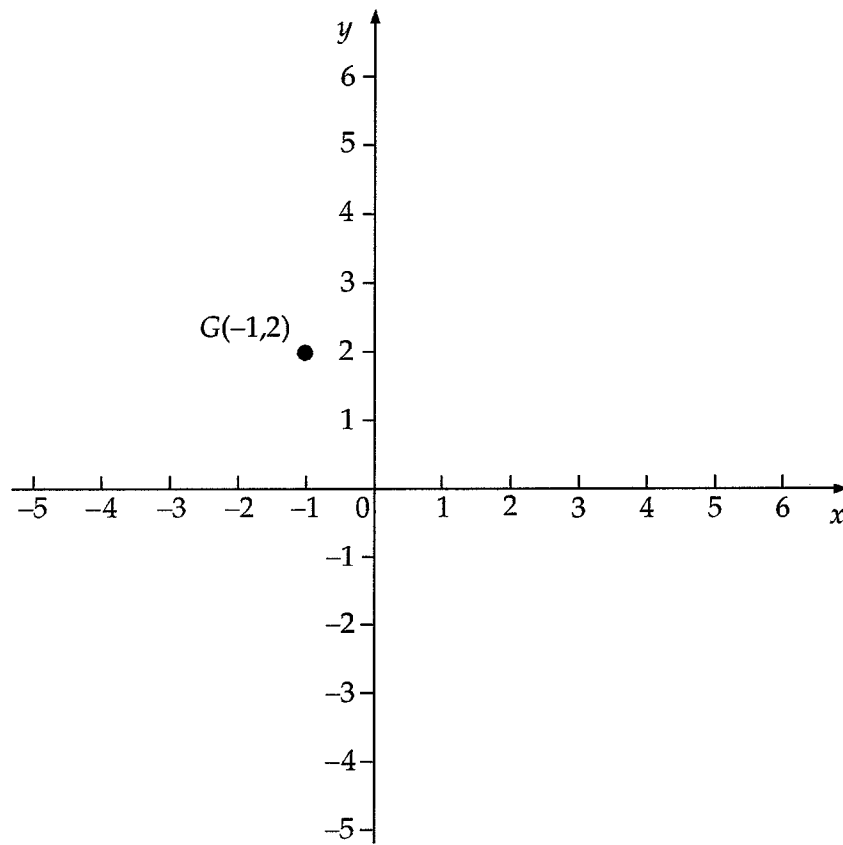
- (A) 18%                      (B) 30%                      (C) 43%                      (D) 70%

32. In a raffle, 75 pink tickets and 25 blue tickets were sold.

If 8 tickets are drawn at random, what is the most likely number of each colour?

- (A) 4 pink and 4 blue                      (B) 5 pink and 3 blue  
(C) 6 pink and 2 blue                      (D) 7 pink and 1 blue

33.

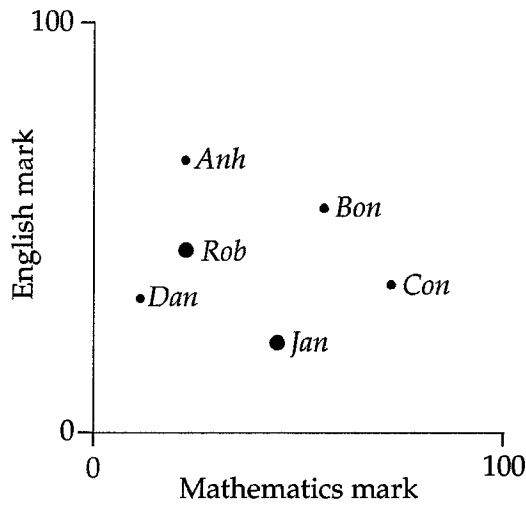


Louie moves 4 units in a horizontal direction from point  $G$ .  
He then moves 3 units in a vertical direction to point  $H$ .

Give one possible set of coordinates for  $H$ .

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34. The graph shows the marks scored by a group of students in an English test and a Mathematics test.



Which student was better at Mathematics than Jan, but worse at English than Rob?

- (A) Anh                      (B) Bon                      (C) Con                      (D) Dan
- 
35. Lyn's normal rate of pay is \$6.80 per hour.  
On Sundays she is paid a special rate, which is one and a half times her normal rate.  
Each Sunday she works from 7 am to 2 pm.
- How much does she earn each Sunday?
- (A) \$34.00                      (B) \$47.60                      (C) \$51.00                      (D) \$71.40
- 
36. Estimate the length of this piece of string in centimetres.



37. On 15 November, the ratio of people using the jet-cat to people using the ferry was 2 : 5.

If 8000 people used the ferry, how many people used the jet-cat on that day?

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38. A barrel contains 15 marbles which are coloured red, white or blue.

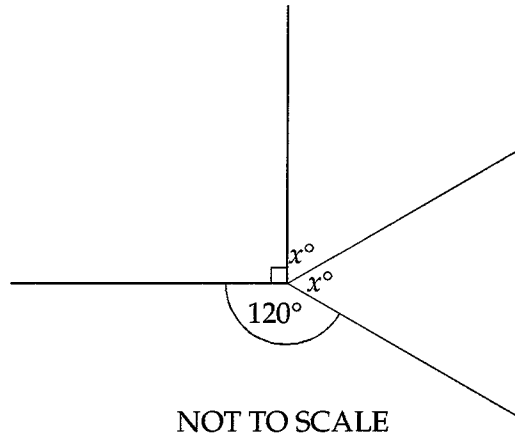
If you draw one marble at random, then

- you are most likely to draw a red.
- you are twice as likely to draw a white than a blue.

What could the contents of the barrel be?

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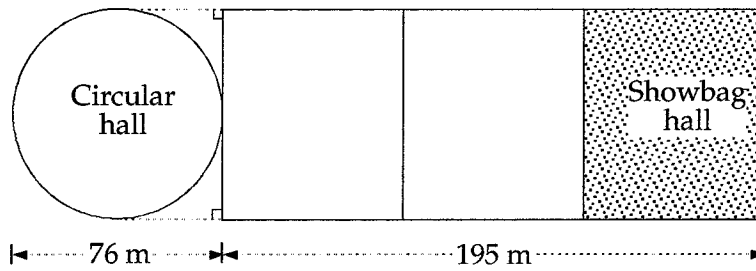
- 39.



Find the value of  $x$ .

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40.



The diagram shows four halls at a showground.  
 The diameter of the circular hall is 76 metres.  
 The three rectangular halls are equal in size and their total length is 195 metres.

Calculate the area of the showbag hall, in square metres.

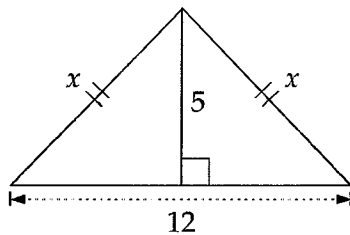
- (A) 4225                      (B) 4940                      (C) 5776                      (D) 14820

41. Lily left work at 5 pm and arrived home at 7 pm.

Which of the following do we need to know to calculate the average speed for her journey?

- (A) Her speed at 6 pm.  
 (B) The number of stops on the way home and the time spent at each stop.  
 (C) The distance travelled from work to home.  
 (D) Her greatest and least speeds during the journey.

42.



Which statement is true?

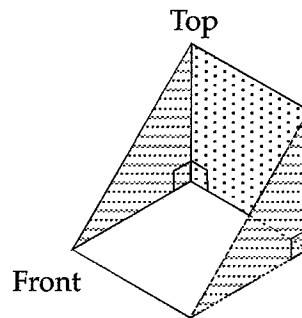
- (A)  $x^2 = 5^2 + 6^2$   
 (B)  $x^2 = 5^2 + 12^2$   
 (C)  $x^2 = 6^2 - 5^2$   
 (D)  $x^2 = 12^2 - 5^2$



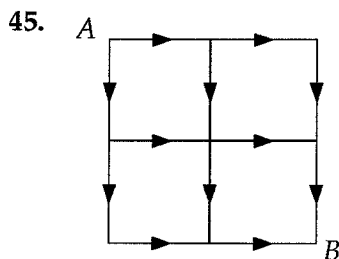
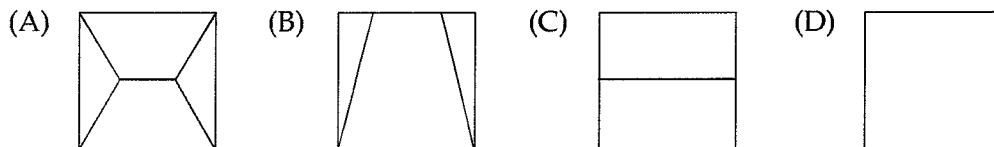
43. In my wallet, I have \$10 notes and \$2 coins only.  
I can afford to buy 5 video tapes at \$4.95 each, but I cannot afford to buy 6 audio tapes at \$4.65 each.

How much money do I have?

44. The figure shows an open tray in the shape of a triangular prism.



Which diagram is the plan view (view from the top)?



The lines represent city streets.  
I can drive only in the direction of the arrows.

In how many different ways can I drive from *A* to *B*?

46. If Sally works 8 hours overtime she is allowed a day's leave.  
She works Monday to Friday.  
She earned a day's leave after working overtime each day for 4 weeks.

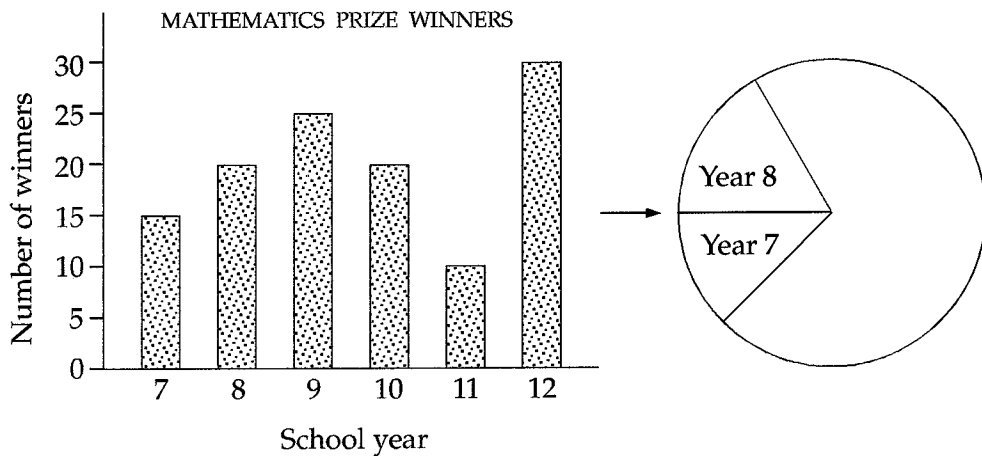
On average, how many extra minutes did she work each day to earn the day's leave?

47.

VISITOR TAX INSTALMENTS	
Weekly earnings	Weekly tax instalment
\$0 – \$397	29 cents for each \$1 of earnings
\$398 – \$729	\$115.13 plus 34 cents for each \$1 of earnings over \$397
\$730 – \$960	\$228.01 plus 43 cents for each \$1 of earnings over \$729
\$961 and over	\$327.34 plus 47 cents for each \$1 of earnings over \$960

Find the weekly tax instalment for a visitor who earns \$600 per week.

48.

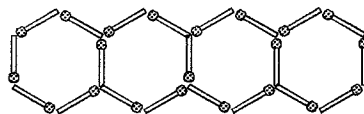


A school has 120 Mathematics prize winners. The column graph shows the number of Mathematics prize winners in each school year.

The sector graph of this same information is being drawn.

What will be the size of the sector angle, in degrees, for the Year 9 sector?

49. Peter has 100 matches which he is using to make this pattern.



He wants to continue the line of hexagons, making as many as possible.

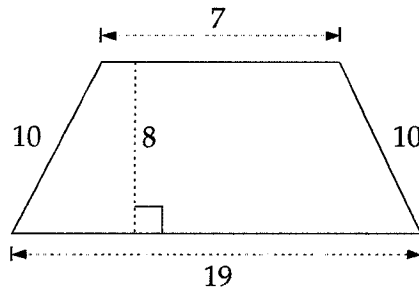
How many hexagons will there be in the complete pattern and how many matches will be left over?

50. Gina's marks on two Mathematics tests are 74% and 68%.

What percentage must she score on her next test for an average of 75% in the three tests?

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51. All the measurements shown on the trapezium are in centimetres.



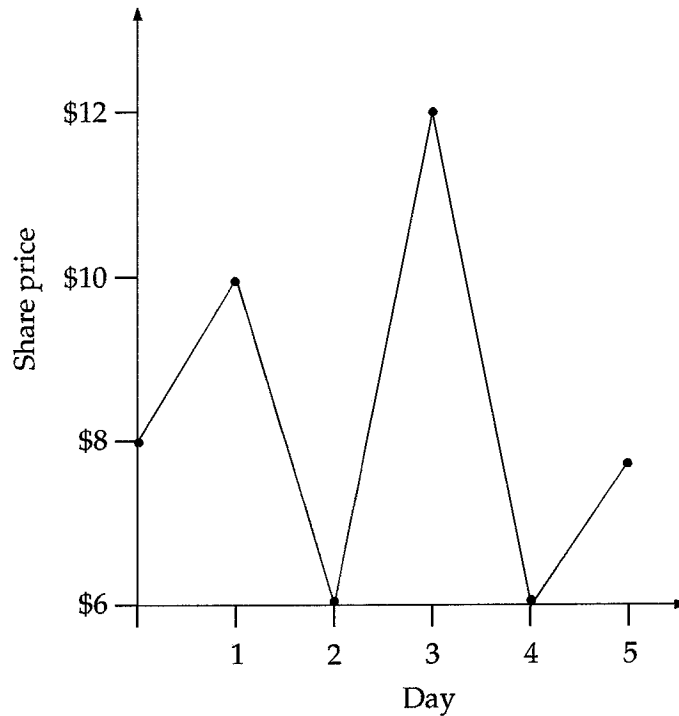
What is its area in square centimetres?

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**Please turn over**

52.

DAILY SHARE PRICES



Which of the following can be *correctly* concluded from this graph?

- (A) The share price doubled on the first day.
- (B) The shares had no value at the end of the second day.
- (C) The final share price was greater than the original share price.
- (D) The shares halved their value on one of the days.

53. The cost,  $C$ , in dollars, of an apartment on level  $L$  of a building in Sydney is given by

$$C = 400\,000 + 5000(L - 33)$$

Find the cost of an apartment on level 42.

54. One marble is chosen at random from a bag of marbles.

Which statement is true if the probability of this marble being red is 1?

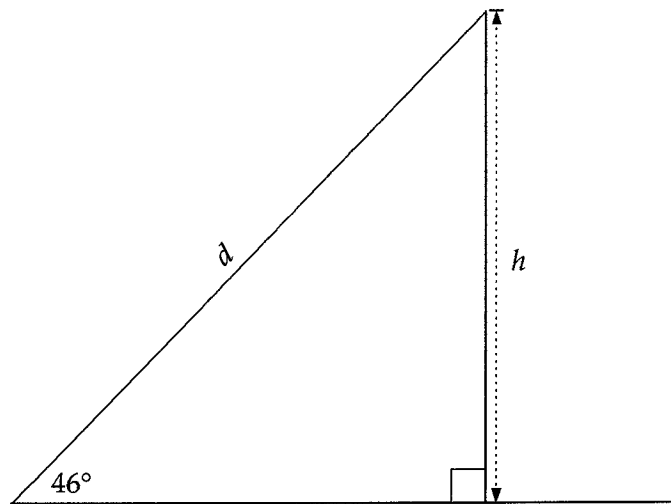
- (A) All of the marbles are red.
  - (B) Only one of the marbles is red.
  - (C) Exactly half of the marbles are red.
  - (D) None of the marbles is red.
- 

55. A piece of pipe measures 1.3 metres.  
A piece of wood measures 1230 millimetres.

Which is longer, and by how many millimetres?

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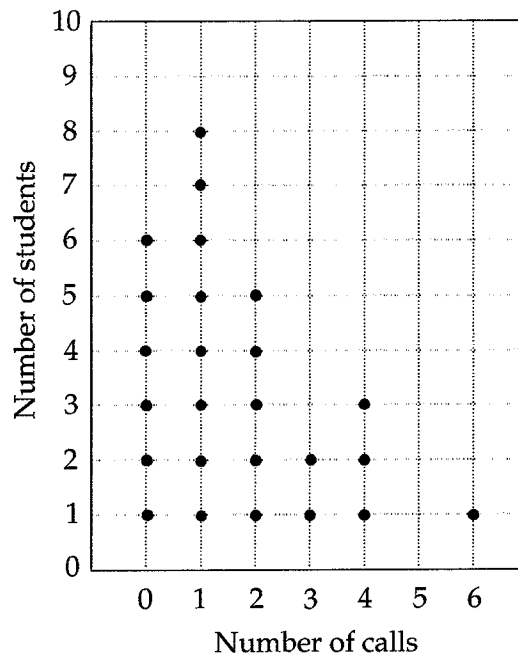
56. A grandstand is built with a slope of  $46^\circ$ .  
The distance  $d$ , on the scale drawing, represents 50 metres.



Find the height  $h$ , to the nearest metre, of the back of the grandstand.

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57. The number of telephone calls made on Saturday by 25 students is shown in the dot plot.

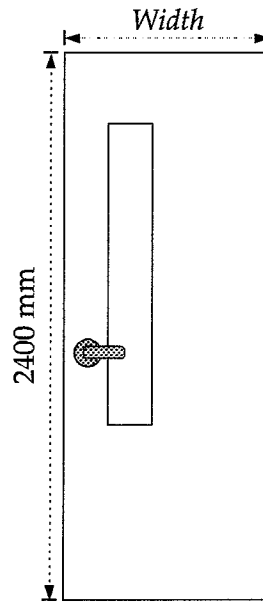


Another student makes two telephone calls on Saturday.

Which of the mean, median, mode or range will change if these calls are included in the diagram?

- (A) mean      (B) median      (C) mode      (D) range

58.



The height of a door is 2400 millimetres.

Use the scale drawing to calculate the width of the door in millimetres.

59. A boys' school needs to determine the number of languages spoken by family members living at their homes. The information in the table was available.

Number of students at the school	200
Number of families with one or more boys at the school	190
Number of students with no brother at the school	180

Use the information to determine the number of students who should be interviewed.

- (A) 180                      (B) 190                      (C) 200                      (D) 380

60. The cost of 4 hamburgers and 2 drinks is \$16.00.  
The cost of 3 hamburgers and 1 drink is \$11.20.

Find the cost of one hamburger.

Use the following information to answer Questions 61 and 62.

Twenty people were surveyed to find the time they waited for surgery at the local hospital.

The results are shown in the table.

Waiting time (months)	Number of people
1	1
2	5
3	7
4	4
5	3

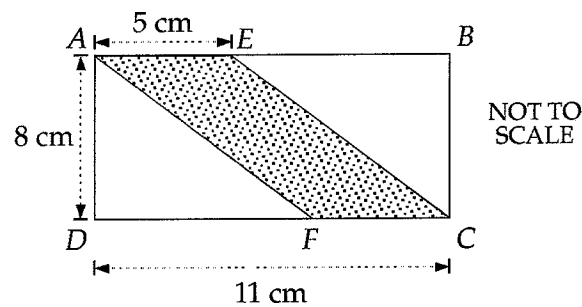
61. Find the *mean* waiting time.

62. One person was chosen at random from the survey.

What is the probability that this person waited at least 4 months for surgery?

- (A)  $\frac{4}{20}$       (B)  $\frac{7}{20}$       (C)  $\frac{13}{20}$       (D)  $\frac{17}{20}$

63.



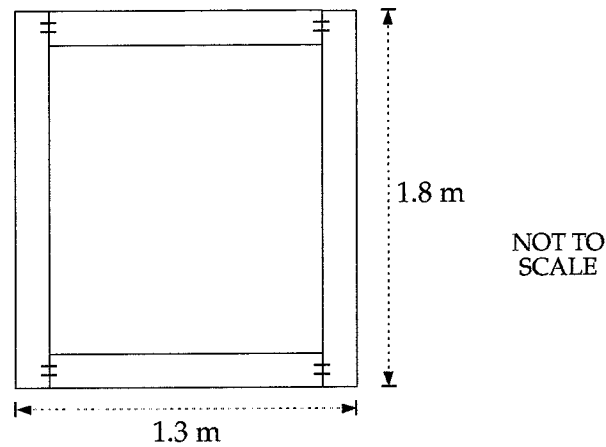
$ABCD$  is a rectangle with length 11 centimetres and width 8 centimetres.

$AE = FC = 5$  cm.

Find the perimeter, in centimetres, of the shaded part.



64.

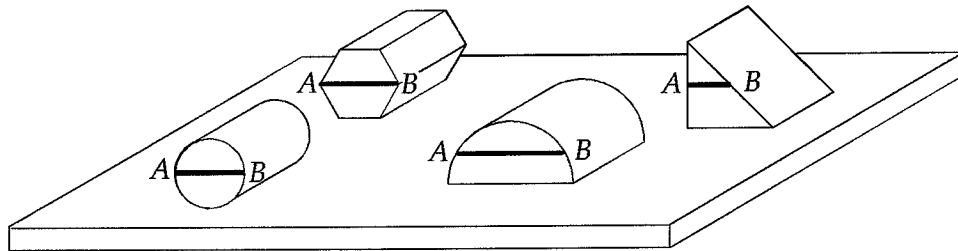


A frame is to be built with 4 joins only as shown.  
The timber to be used is 10 centimetres wide and is sold in 2 metre and 3 metre lengths.

What lengths of the timber would you order, so that a minimum amount would be wasted?

- (A) Two 2 metre lengths and one 3 metre length      (B) Three 2 metre lengths  
(C) Two 3 metre lengths      (D) Four 2 metre lengths

65.



Four solids are sitting on a horizontal table.  
A horizontal cut,  $AB$ , is made through each solid as shown.

In how many of the solids will the cross-section made by the cut be a rectangle?

- (A) One solid only  
(B) Two solids only  
(C) Three solids only  
(D) All four solids

66. Given the formula

$$P = 2L + 2B,$$

find  $L$  when  $P = 100$  and  $B = 8$ .

67. Four friends tried to select the winning teams of 3 games. Their selections are shown in the table.

<i>Game</i>	<i>Cam</i>	<i>Pam</i>	<i>Sam</i>	<i>Tam</i>
1	Wombats	Wombats	Buffaloes	Wombats
2	Crocodiles	Crocodiles	Crocodiles	Dingoes
3	Emus	Foxes	Emus	Foxes



- No one selected 3 winners
- No one selected 3 losers

What could the three winning teams have been?

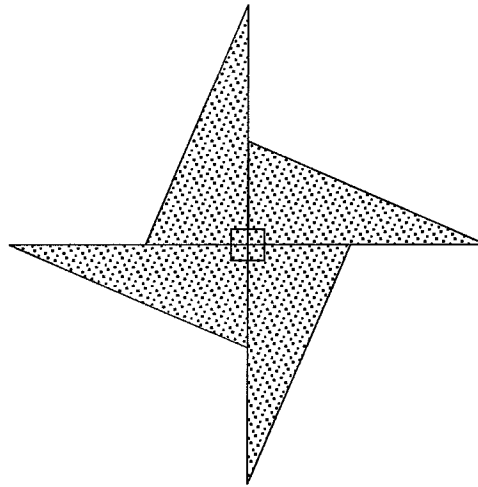
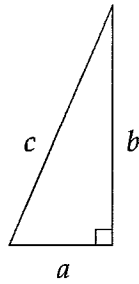
- (A) Buffaloes, Crocodiles, Emus      (B) Wombats, Crocodiles, Foxes  
(C) Buffaloes, Dingoes, Foxes      (D) Wombats, Dingoes, Emus
68. Six planes leave an airport at equal intervals. The first plane leaves at 9 am and the last plane leaves at 10 am.
- At what time does the fourth plane leave?

69. Jessica wants to buy 20 square metres of tiles.

Which of the following would be the cheapest?

- (A) Tiles for \$39 per square metre  
(B) Tiles for a total price of \$820  
(C) Tiles of size  20 cm at \$1.50 each  
(D) Tiles of size  10 cm at 40 cents each

70.



The shaded design is made from four of the small triangles.

What is the perimeter of the design?

(A)  $4c + 4b + 4a$

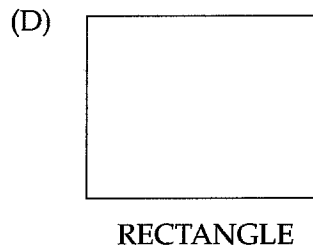
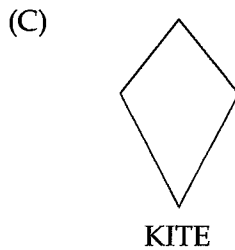
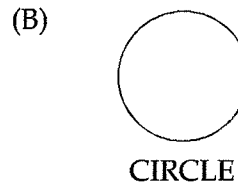
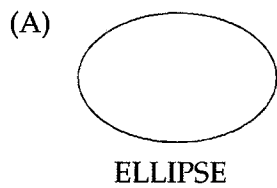
(B)  $4c + 4b - 4a$

(C)  $4a - 4b + 4c$

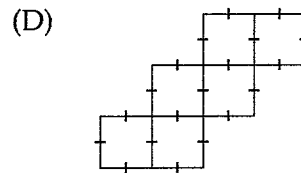
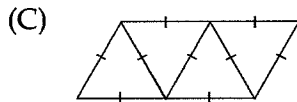
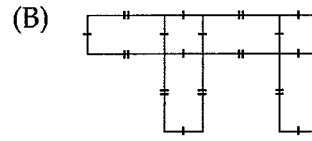
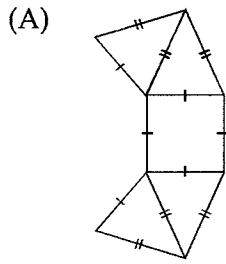
(D)  $4a^2 + 4b^2 + 4c^2$

Each of Questions 71, 72 and 73 may have more than one correct answer. On the separate Answer Sheet fill in EVERY correct answer for each of these questions.

71. Only two axes of symmetry are possible in which of the following?



72. Which of the following nets when folded will form a solid?



73. For which of the following equations will the solution be  $x = 10$ ?

(A)  $3(x - 2) = 24$

(B)  $3 + (x - 2) = 11$

(C)  $3 - (x - 2) = 5$

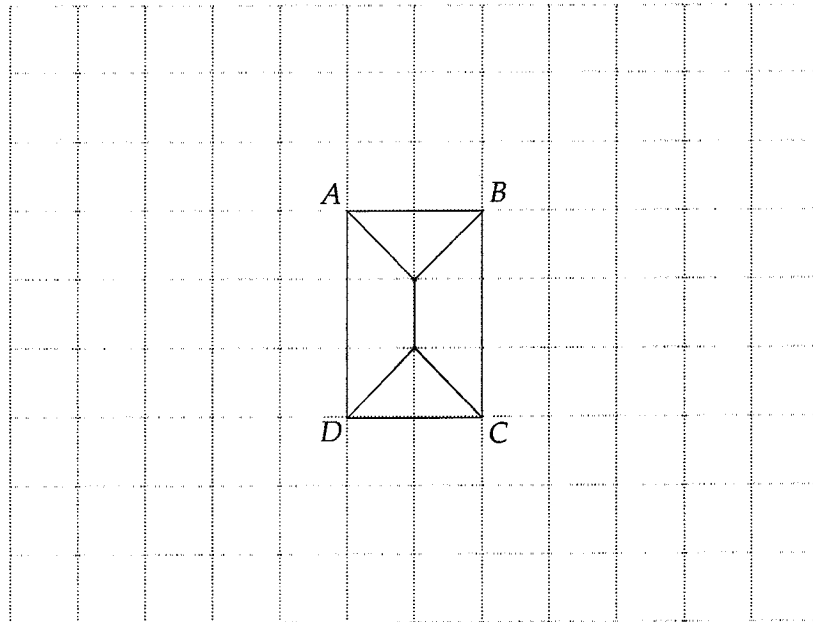
(D)  $\frac{3+x}{3} = 10$

End of questions in Section 2 that may require you to fill in more than one correct answer.

For Questions 74 and 75 draw your answers on the diagrams provided.

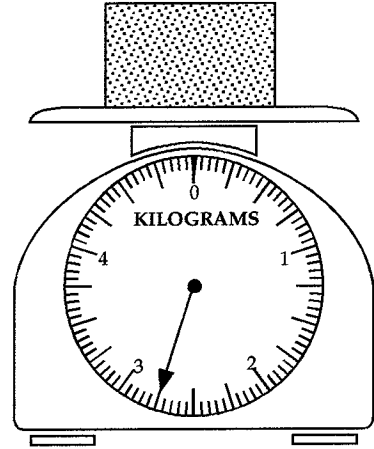
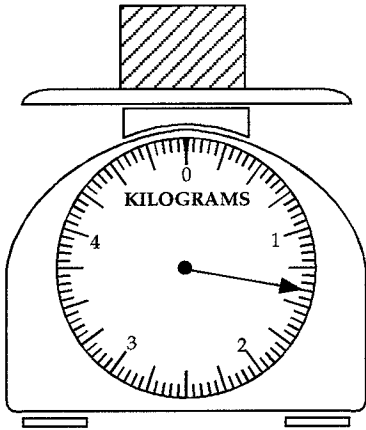
74. The diagram shows the plan view of a garage (view from the top).  
The position of the garage is to be rotated clockwise about C through  $90^\circ$ .

Accurately draw the new position of the garage on the diagram below.

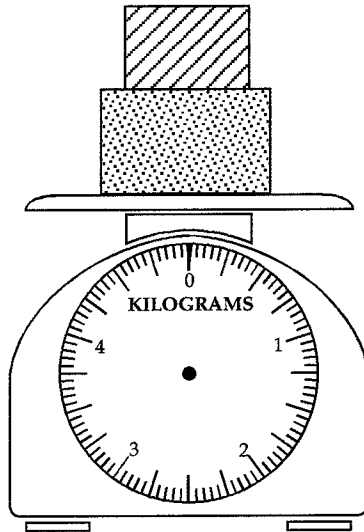


Please turn over

75. Two parcels are weighed separately on a set of scales.



They are then put on the scales together.



Draw the pointer on the scales to show the combined weight of the parcels.

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**End of Part A**

**Go on to Part B**