SYDNEY TECHNICAL HIGH SCHOOL

(*Celebrating 100 Years of Public Education*)

YEAR 8

TERM 3 ASSESSMENT TASK

2011

Mathematics

General Instuctions

- Working time - 65 minutes
- Write using black or blue pen
- All necessary working should be shown in every question
- All questions are of equal value
- Diagrams are not drawn to scale
- Total marks - 55

Section A - 30 minutes
- Calculators are not to be used
- Answer questions in the space provided
- Do not start section B until you are instructed to do so

Section B - 35 minutes
- Calculators may be used
- Time allowed for this section is 35 minutes
- Select the alternative A, B, C or D that best answers the question and fill in the response oval on the answer sheet.

Name :_____

Teacher :_____

Section A	Section B	Total

Section A (Calculators are not to be used in this section)

1. Find 5% of $160 .

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2. *Simplify* $(x-1) - (1-x) + (x-1)$

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3. Find the median of the following scores : **14 11 10 15 19 18 17 14**
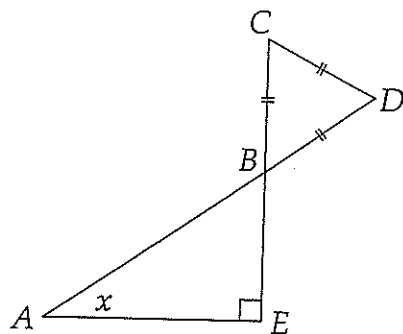

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4. If you buy seven pens at $1.78 each, how much change will you get from $20 ?

---

5. Solve $6(x-1) = x + 10$

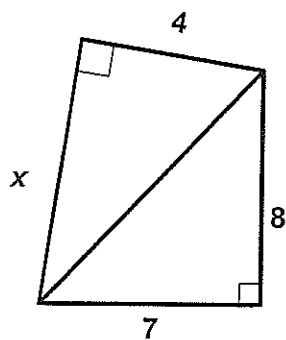6. A 650 gram jar of curry paste consists of chillies, garlic and nutmeg in the ratio $5 : 6 : 2$.

How many grams of garlic are in the jar ?

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7. Find the value of x.

NOT TO
SCALE

----

8. Find the value of x^2.

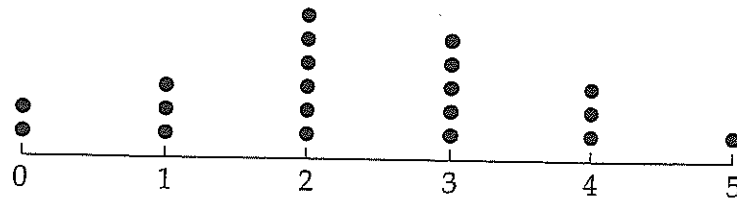
9. A sequence is formed by adding the two previous numbers together.

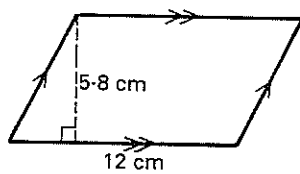Fill in the two missing numbers in this sequence.

4, ..., ..., 22

10. This dot plot shows the number of children in 20 families.

What percentage of families have 3 or more children ?

----

11. Find the area of the parallelogram.

5-8 cm

12 cm

----

12. How many whole numbers from 10 to 99 have the sum of their digits equal to 9 ?

----

13. 600 people were surveyed about the type of camera they use.

A sector graph was drawn showing the results. The sector representing Nikon cameras has an angle of 30° at the centre. How many people in the survey use Nikon cameras ?

14. Simplify $(2x^4)^3 \div 2x^2$

15. Solve $\frac{1}{3}(x - 6) = 2x + 1$

16. Bill and Jo share an amount of money in the ratio 3:5.
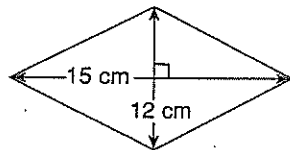
If Jo gets $120, how much does Bill get ?

17. Factorise $4x^2 - 2x$

18.

Score	frequency
3	2
4	8
5	6
6	4

Find the mean of the above set of scores.

---

19. Find the area of the rhombus.

---

20. A train travels at a speed of 180 kilometres per hour.

How many metres does it travel in 1 second ?
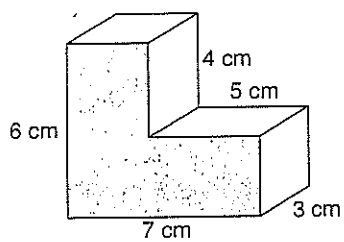

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21. Find the value of x ?
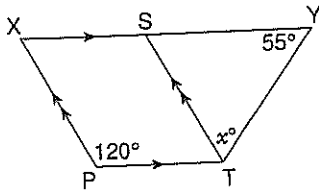
X S Y
55°
120° $x°$
P T

_____

_____

_____

22. The stem-and-leaf plot shows the number of people who enter a coffee shop each day.

11	3 4 4
12	1 8 9 9
13	0 2 5 7 7 9
14	1 3 3 3 8
15	2 9

Find the mode of these scores.

_____

_____

23. Solve $\dfrac{1}{x-5} = 0.01$

24. Find the volume of the prism shown below.

25. What is the last digit of the number $(7^5)^3$.

End of Section A

SECTION B : MULTIPLE CHOICE

Instructions:

- Do not start this section until instructed.
- Circle the letter that best answers the question.
- You have 35 minutes for this section.

1.	A	B	C	D	16.	A	B	C	D
2.	A	B	C	D	17.	A	B	C	D
3.	A	B	C	D	18.	A	B	C	D
4.	A	B	C	D	19.	A	B	C	D
5.	A	B	C	D	20.	A	B	C	D
6.	A	B	C	D	21.	A	B	C	D
7.	A	B	C	D	22.	A	B	C	D
8.	A	B	C	D	23.	A	B	C	D
9.	A	B	C	D	24.	A	B	C	D
10.	A	B	C	D	25.	A	B	C	D
11.	A	B	C	D	26.	A	B	C	D
12.	A	B	C	D	27.	A	B	C	D
13.	A	B	C	D	28.	A	B	C	D
14.	A	B	C	D	29.	A	B	C	D
15.	A	B	C	D	30.	A	B	C	D

1) Simplify $8 - 2(3t - 4)$.

(A) $-6t$ (B) $4 - 6t$ (C) $18t - 24$ (D) $16 - 6t$

---

2) The area of a block of land is 3 hectares.
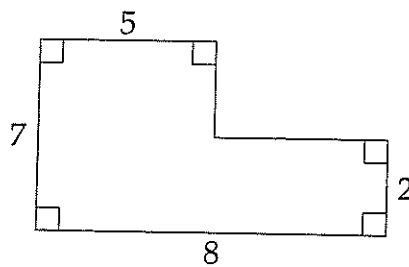
How many square metres is this?

(A) 3000   (B) 30 000   (C) 300 000   (D) 3 000 000

---

3) What is the perimeter of the shape?

NOT TO SCALE

(A) 22   (B) 25   (C) 27   (D) 30

---

4) Solve the equation $\dfrac{3x-1}{2} = 7$.

(A) $x = \dfrac{13}{3}$ (B) $x = 5$ (C) $x = \dfrac{16}{3}$ (D) $x = 12$

---

5) In Australia 0·5% of people have a rare blood type.

There are 18 000 000 people in Australia.

How many have this rare blood type?

(A) 9 000   (B) 90 000   (C) 900 000   (D) 9 000 000

---

6) Simplify $\left(\dfrac{t^6}{t^2}\right)^2$

(A) t^6 (B) t^8 (C) t^9 (D) t^{16}
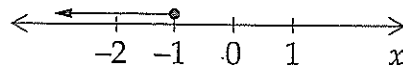
7) When $4a + 2ab$ is completely factorised, the correct answer is

(A) $2(2a + ab)$ (B) $a(4 + 2b)$ (C) $2a(2 + b)$ (D) $4a(1 + 2b)$

---

8) The eye colours of a sample of children were recorded. When analysing this data, which of the following could be found?
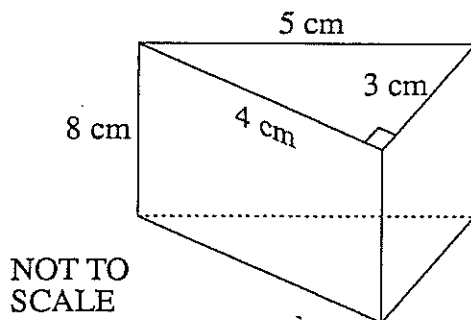
(A) Mean   (B) Median   (C) Mode   (D) Range

---

9) Which of the following inequations is represented by the graph shown?

(A) $x > -1$ (B) $x \geq -1$ (C) $x < -1$ (D) $x \leq -1$

---

10)

5 cm

3 cm

8 cm   4 cm

NOT TO SCALE

The volume of this triangular prism is

(A) 48 cm^3

(B) 60 cm^3

(C) 80 cm^3

(D) 96 cm^3

---

11) What is the area of this shape?

NOT TO SCALE

8 cm

6 cm

20 cm
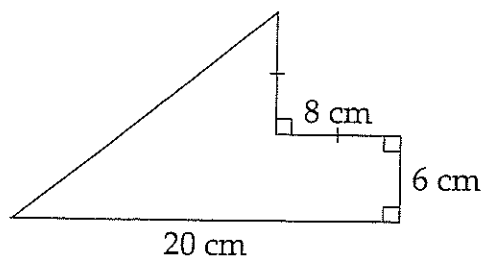
(A) 76 cm^2 (B) 132 cm^2 (C) 188 cm^2 (D) 216 cm^2

12) A set of scores is displayed in a stem-and-leaf plot.
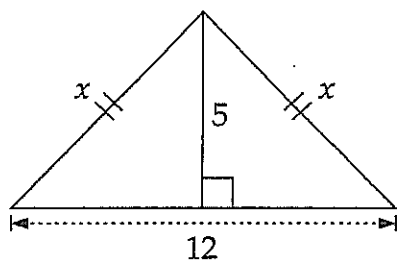What is the median of this set of scores?

(A) 28   (B) 30

(C) 33   (D) 47

1	2 2 3
2	5 8
3	8 9
4	1 3 9

---

13) From the point P (–3, –1) on a number plane, Lisa moved three units
in a vertical direction to Q, and then four units in a horizontal direction to R.
The coordinates of R could be
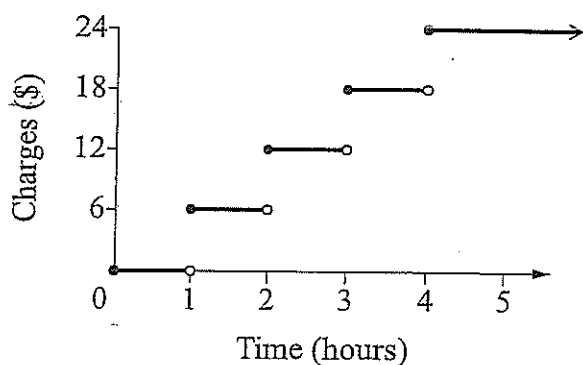
A. (0, 3)   B. (0, –5)   C. (–1, –4)   D. (–7, 2)

---

14)

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) $x^2 = 12^2 - 5^2$

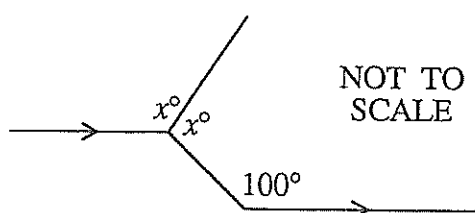**15)** The step graph shows the charges for a carpark.

Maria enters the carpark at 10:10 am and exits at 1:30 pm.

How much will she pay in charges?

(A) $6   (B) $12   (C) $18   (D) $24
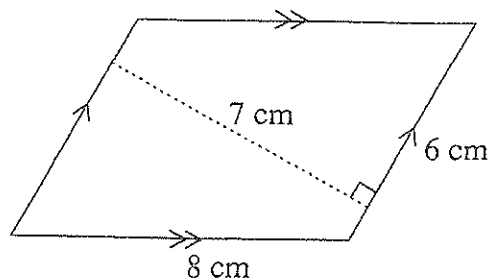
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16)

NOT TO SCALE

What is the value of x?

(A) 80   (B) 100

(C) 130   (D) 140
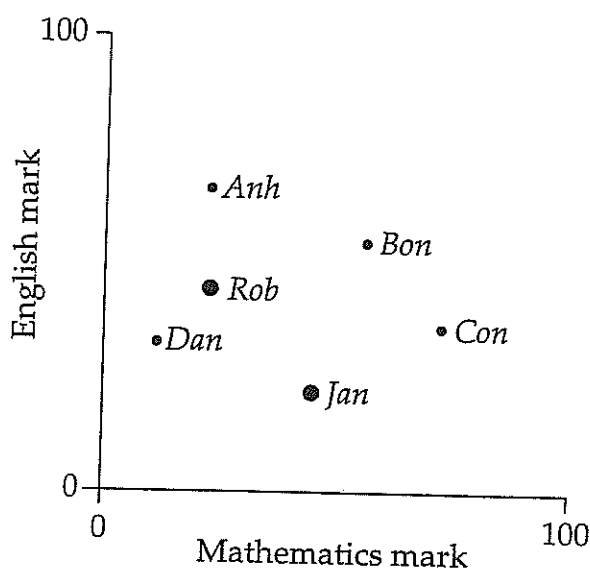
17)

The area of the parallelogram is

(A) 21 cm^2

(B) 24 cm^2

(C) 42 cm^2

(D) 48 cm^2

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18) Use the formula $s = ut + \dfrac{1}{2}at^2$ to find s if $u = 8$, $t = 5$, $a = 10$.

(A) 90   (B) 165   (C) 665   (D) 1290

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19) 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

---

20) For the scores represented in the frequency distribution table, the mean is 6 and the mode is 4.

Scores	Frequency
x	6
y	4

The range of scores is

A. 3   B. 5   C. 7   D. 9

21) Pamela has a music collection of 600 songs. The songs are stored on her computer, MP3 player and CDs in the ratio of $2:3:5$ respectively.

How many songs are stored on her MP3 player?

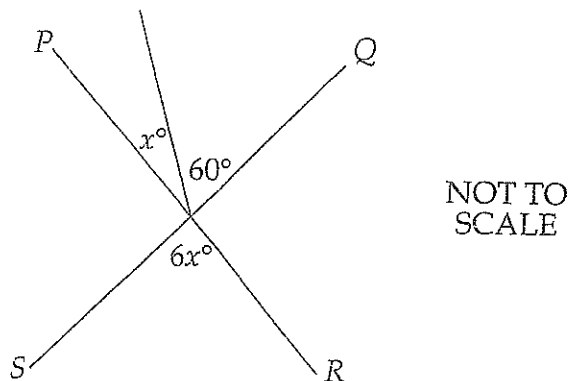(A) 60   (B) 120   (C) 180   (D) 200

---

22) At present Georgia is x years old.

Her mother is three times as old as Georgia.

In two years' time, the sum of their ages will be

(A) $3x+2$ (B) $3x+4$ (C) $4x+2$ (D) $4x+4$

---

23)

PR and QS are straight lines.
Find the value of x.

(A) 10   (B) 12   (C) 15   (D) 30

---

24) The height (h metres) and age (a years) of a tree are related by the following inequality:

$h < 4a - 3$ for values of a between 1 and 10

Which pair of values satisfy this inequality?

(A) $h=2$ and $a=1$ (B) $h=6$ and $a=2$ (C) $h=10$ and $a=3$ (D) $h=20$ and $a=6$

25) The ratio of boys to girls in a class is 3 : 2. Today there are 12 boys in the class. Tomorrow 2 new boys will be enrolled.

The ratio of boys to girls will then be

(A) 5 : 2   (B) 7 : 1   (C) 7 : 4   (D) 7 : 9

---

26) The table below shows the number of each type of pizza sold on a Friday night at a pizza shop.

Type	Number
Ham and Pineapple	48
Meat Special	37
Supreme	21
Oz Special	14

This information is to be represented on a sector graph.
The angle for Supreme on this graph would be.

(A)   19°   (C)   7°

(B)   21°   (D)   63°

---

27) The instructions on a bottle of liquid fertilizer recommended diluting 10ml of fertilizer in 4L of water. How much fertilizer should be added to a bucket containing 2.5L of water?

(A)   1ml   (B)   4ml   (C)   6.25ml   (D)   16ml

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28) A taxi charge (c) in dollars was calculated by using the formula
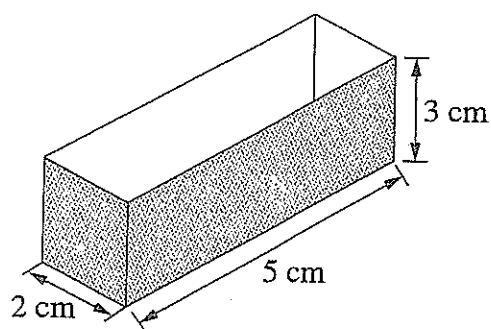
$$c = 3.1 + 1.8k$$

where k is the distance travelled in kilometres.

Kiran caught a taxi and paid $36.40 for the journey.

How many kilometres did Kiran travel, correct to one decimal place?

(A) 17.1   (B) 18.5   (C) 34.7   (D) 68.6

29) What is the surface area of the open box?

3 cm

NOT TO SCALE

5 cm

2 cm

(A)   10 cm²   (B)   30 cm²   (C)   52 cm²   (D)   62 cm²

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30) Rebecca takes 6 minutes to eat a pizza. Angela takes 12 minutes to eat a pizza of the same size.

At these rates, how many minutes would it take Rebecca and Angela to eat one pizza together?

(A) $3\frac{1}{3}$ (B)   4   (C) $7\frac{1}{2}$ (D)   9

YEAR 8

TERM 3 ASSESSMENT TASK

2011

Mathematics

General Instuctions

- Working time - 65 minutes
- Write using black or blue pen
- All necessary working should be shown in every question
- All questions are of equal value
- Diagrams are not drawn to scale
- Total marks - 55

Section A - 30 minutes

- Calculators are not to be used
- Answer questions in the space provided
- Do not start section B until you are instructed to do so

Section B - 35 minutes

- Calculators may be used
- Time allowed for this section is 35 minutes
- Select the alternative A, B, C or D that best answers the question and fill in the response oval on the answer sheet.

Name : _____Solutions_____

Teacher : _____

Section A	Section B	Total

Section A   (Calculators are not to be used in this section)

1. Find 5% of $160.

$8   (must have $ sign)

2. Simplify $(x - 1) - (1 - x) + (x - 1)$

$3x - 3$

3. Find the median of the following scores : 14 11 10 15 19 18 17 14

$14\frac{1}{2}$

4. If you buy seven pens at $1.78 each, how much change will you get from $20 ?

$7·54

5. Solve $6(x - 1) = x + 10$

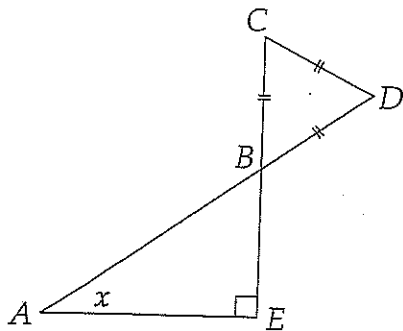$x = 3\frac{1}{5}$ or $x = 3·2$ or $x = \frac{16}{5}$

(must have $x =$)

6. A 650 gram jar of curry paste consists of chillies, garlic and nutmeg in the ratio $5 : 6 : 2$.

   How many grams of garlic are in the jar ?
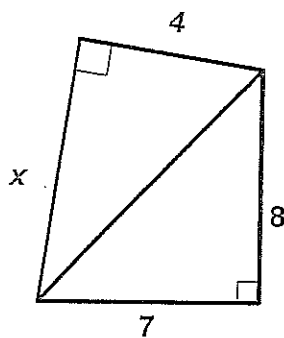
   300

   ---

7. Find the value of x.

   C

   D

   B

   NOT TO
   SCALE

   A x E

   30°

   (do not need degree sign
   for mark)

8. Find the value of x^2.

   4

   x

   8

   7

   97
   ---

9. A sequence is formed by adding the two previous numbers together.

   Fill in the two missing numbers in this sequence.

   4, 9, 13, 22

   (both for 1 mark)

10. This dot plot shows the number of children in 20 families.
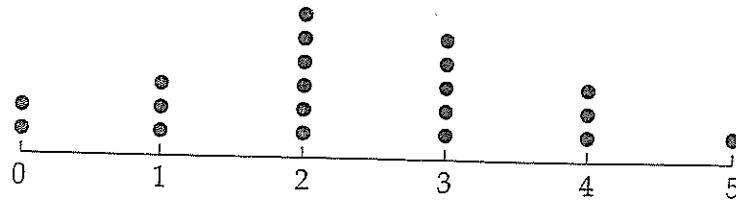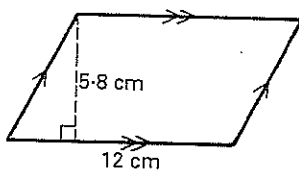

What percentage of families have 3 or more children ?

45%

(do not need % sign for 1 mark)

11. Find the area of the parallelogram.

5·8 cm

12 cm

$69·6 \ cm^2$

(must have units)

12. How many whole numbers from 10 to 99 have the sum of their digits equal to 9 ?

9

13. 600 people were surveyed about the type of camera they use.

A sector graph was drawn showing the results. The sector representing Nikon cameras has an angle of 30° at the centre. How many people in the survey use Nikon cameras ?

$$50$$

14. Simplify $(2x^4)^3 \div 2x^2$

$$4x^{10}$$

15. Solve $\frac{1}{3}(x - 6) = 2x + 1$

$$x = -1\frac{4}{5} \quad \text{or} \quad x = \frac{-9}{5} \quad \text{or} \quad x = -1 \cdot 8$$

$$(\text{must have } x =)$$

16. Bill and Jo share an amount of money in the ratio 3:5.

If Jo gets $120, how much does Bill get ?

$$\$72$$

$$(\text{do not need } \$ \text{ sign for 1 mark})$$

17. Factorise $4x^2 - 2x$

$$2x(2x-1)$$

(must be fully factorised)

18.

Score	frequency
3	2
4	8
5	6
6	4

Find the mean of the above set of scores.

$$4 \cdot 6$$

19. Find the area of the rhombus.

15 cm

12 cm
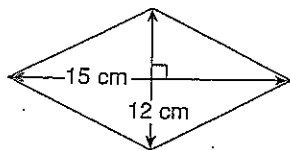
$$90 \text{ cm}^2$$

(mark correct even if units wrong or missing)

20. A train travels at a speed of 180 kilometres per hour.

How many metres does it travel in 1 second ?

$$50 \text{ m}$$

(do not need units for mark)

21. Find the value of x ?
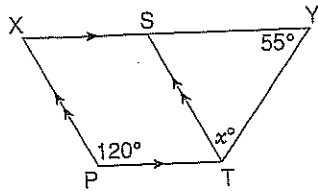
65

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22. The stem-and-leaf plot shows the number of people who enter a coffee shop each day.

11	3 4 4
12	1 8 9 9
13	0 2 5 7 7 9
14	1 3 3 3 8
15	2 9

Find the mode of these scores.
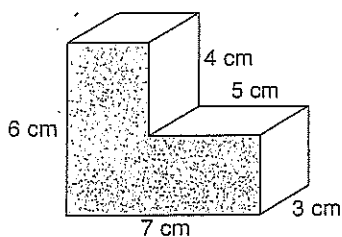
143

23. Solve $\dfrac{1}{x-5} = 0.01$

$x = 105$

(must have $x =$)

24. Find the volume of the prism shown below.

4 cm
5 cm
6 cm
7 cm
3 cm

$66 \ cm^3$

(must have correct units)

25. What is the last digit of the number $(7^5)^3$.

3

End of Section A

Name : SOLUTIONS

Select the alternative A, B, C or D that best answers the question. Fill in the response oval completely.

If you think you have made a mistake, put a cross through the incorrect answer and fill in the new answer.

A ●   B ✖   C ○   D ○

If you change your mind and have crossed out what you consider to be the correct answer, then indicate the correct answer by writing the word *correct* and drawing an arrow as follows.

correct

A ✖   B ✖   C ○   D ○

#	A	B	C	D
1	●	○	○	○
2	○	○	●	○
3	○	○	○	●
4	○	○	○	●
5	○	○	○	●
6	●	○	○	○
7	○	○	○	●
8	○	○	●	○
9	○	○	○	●
10	○	○	●	○
11	●	○	○	○
12	●	○	○	○
13	○	○	●	○
14	○	○	○	●
15	○	●	○	○

#	A	B	C	D
16	○	●	○	○
17	○	○	●	○
18	○	○	●	○
19	○	●	○	○
20	○	●	○	○
21	○	○	●	○
22	●	○	○	○
23	○	○	○	●
24	●	○	○	○
25	○	●	○	○
26	○	●	○	○
27	○	○	●	○
28	●	○	○	○
29	○	●	○	○
30	○	●	○	○