VICTORIAN CURRICULUM AND ASSESSMENT AUTHORITY

STATEWIDE ASSESSMENT

# AIM 2007

*Achievement Improvement Monitor*

**Year 9**

# MATHEMATICS TEST 1

## STUDENT DETAILS

## TEST INSTRUCTIONS

1. You must do your own work.
2. Do not speak to other students during the test.
3. Raise your hand if you need to speak to the teacher.
4. Follow all directions given to you by the teacher.
5. All questions must be answered using the pencil you have been given. If you need to change an answer, carefully erase it and write another answer.
6. You are NOT permitted to use a calculator of any type.
7. To confirm you have the correct booklet, print your name below.

**Print your name here:**

***YOU HAVE 45 MINUTES TO COMPLETE THIS TEST***



Victoria
The Place To Be

## Practice Questions

**P1** Malcolm bought four CDs at $12 each.
What was the total cost?

Shade one bubble

- ⬭ $16
- ⬭ $24
- ⬭ $48
- ⬭ $60

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**P2** Which one of the numbers in the table is an odd number?

| Number | 2 | 3 | 4 | 6 |
|---|---|---|---|---|
| | ⬭ | ⬭ | ⬭ | ⬭ |

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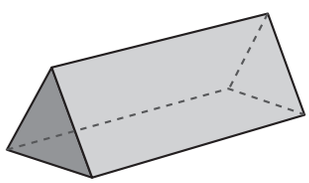
**P3** $13 \times 3 =$ ☐

Write your answer in the box

## You have 45 minutes to complete this test.
## You are NOT permitted to use a calculator of any type.

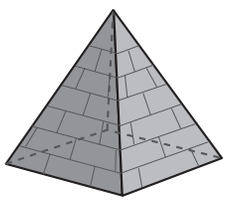
**1** Which one of the following shapes is a prism?

Shade one bubble


⬭


⬭


⬭


⬭

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**2** The table shows ticket prices for a motor race.

| General Admission | |
|---|---|
| Adult | $55 |
| Child | $27 |
| Family (2 adults and 2 children) | $130 |

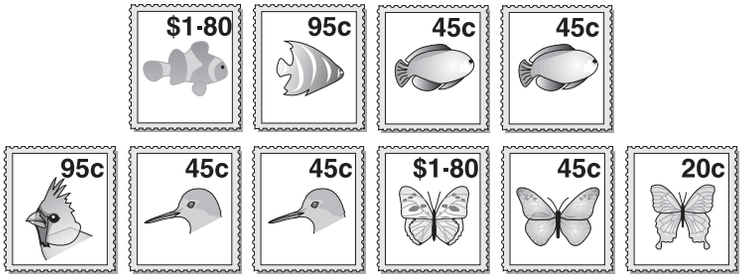
How much is saved by buying a family ticket instead of buying two adult and two child tickets?

$27 ⬭ $28 ⬭ $34 ⬭ $36 ⬭

**Questions 3 and 4 refer to the following information.**

Shade one bubble

These stamps are put in a bag and mixed.




**3** Cathy selects one stamp at random.

What is the chance that the value of the stamp she selects is less than 50 cents?

$\frac{1}{10}$ ○ $\frac{1}{5}$ ○ $\frac{1}{2}$ ○ $\frac{3}{5}$ ○

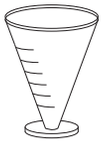
**4** Angelo mixes the same ten stamps and selects one at random.

Given that the stamp he selects has a picture of a fish on it, what is the chance it is a 95c stamp?

$\frac{1}{10}$ ○ $\frac{1}{6}$ ○ $\frac{1}{3}$ ○ $\frac{1}{4}$ ○

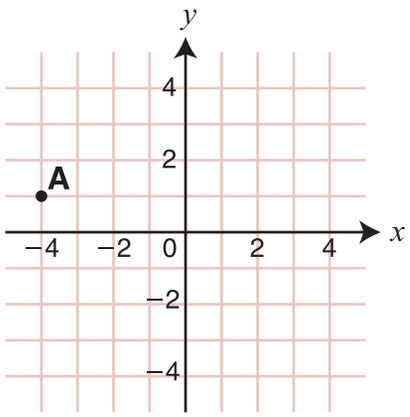
**5** Jim has a 200 ml bottle of medicine.

How many 15 ml doses can he pour from the bottle?



11 ○ 12 ○ 13 ○ 14 ○

**6**

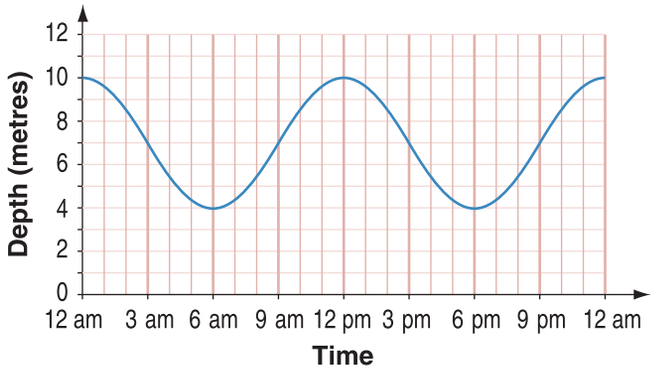



What are the coordinates of point **A**?

○ (–4, –1)
○ (–4, 1)
○ (–1, –4)
○ (1, –4)

**7** The graph shows the depth of sea water at different times of the day.

Shade one bubble




The depth at 10 pm is the same as the depth at which of the following times?

3 am ⬭ 12 pm ⬭ 2 pm ⬭ 4 pm ⬭

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**8** What is the median of these numbers?

10 12 14 15 16 19 19 20 25

⬭ 10
⬭ 15
⬭ 16
⬭ 19

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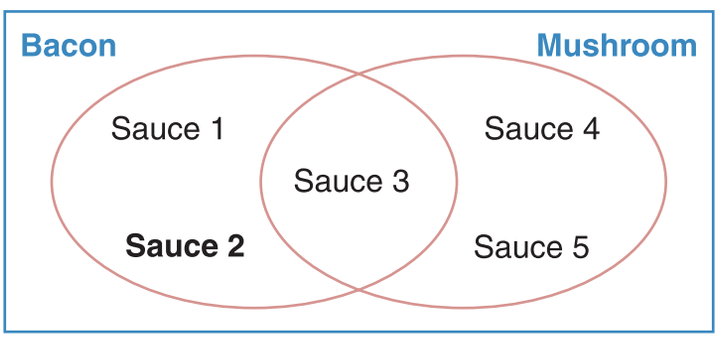
**9** Five varieties of pasta sauce are classified according to whether or not they contain bacon or mushroom or both.

The results are shown in the Venn diagram.

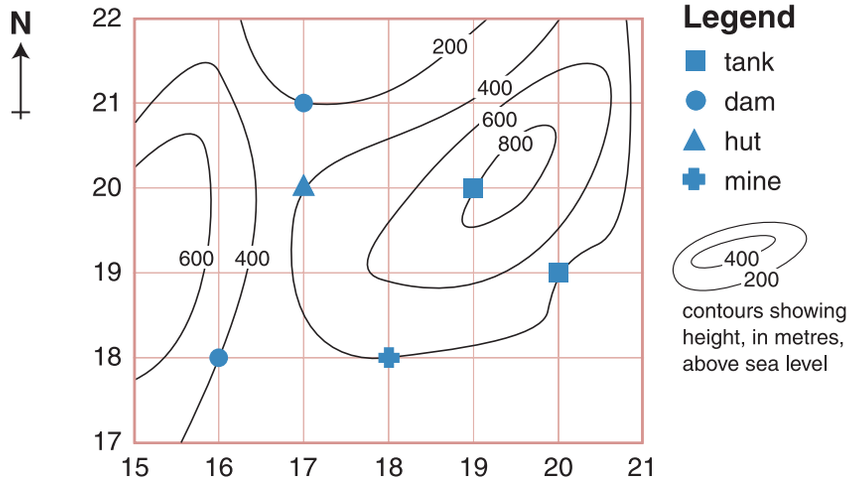



Which one of the following could list the contents of **Sauce 2**?

⬭ tomato, bacon, capsicum and garlic
⬭ tomato, onion, capsicum and garlic
⬭ cream, chicken, mushroom and garlic
⬭ cream, bacon, mushroom and capsicum

**Questions 10 and 11 refer to the following information.**

Shade one bubble




**10** What is the difference in height above sea level between the dam at (16, 18) and the tank at (19, 20)?

100 metres ○ 200 metres ○ 400 metres ○ 600 metres ○

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**11** Which of the following is closest to the direction of the mine **from** the hut?

S30°E ○ N30°E ○ S30°W ○ N30°W ○

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**12** Solve for $x$

$3x - 2.4 = 9.6$

$x =$ ☐

Write your answer in the box

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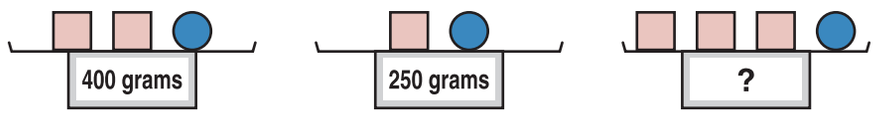
**13**




Shade one bubble

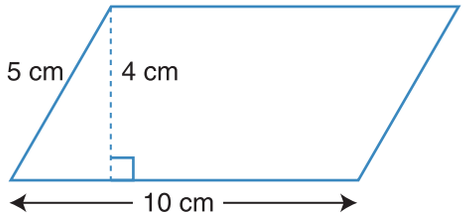
What would three blocks and one ball weigh?

450 grams ○ 550 grams ○ 600 grams ○ 650 grams ○

**14** What is the area of this parallelogram?

Shade one bubble

- ○ 20 cm²
- ○ 25 cm²
- ○ 40 cm²
- ○ 50 cm²

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**15** The table shows the number of cartons of different types of milk sold in a shop on one day.

| Milk type | Full cream | High calcium | Reduced fat | Low fat | Soy |
|---|---|---|---|---|---|
| Number of cartons sold | 180 | 130 | 80 | 65 | 45 |

What is the ratio of **Full cream** milk cartons to **Soy** milk cartons sold on that day?

4:1 ○ 5:1 ○ 1:4 ○ 1:5 ○

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**16** A cyclist travels 120 km in 8 hours.

The average speed of the cyclist is

6 km/hr ○ 8 km/hr ○ 12 km/hr ○ 15 km/hr ○

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**17** Fifteen students recorded the number of CDs in their music collections.

12, 23, 23, 25, 26, 30, 36, 39, 40, 48, 48, 50, 51, 51, 62

Write your answer in the box

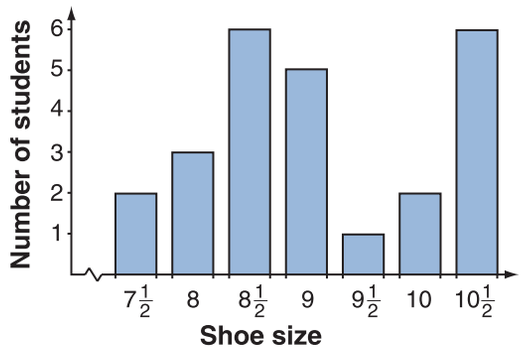
The data is displayed below as a stem-and-leaf plot.

| | |
|---|---|
| 1 | 2 |
| 2 | 3 3 5 6 |
| 3 | 0 6 9 |
| 4 | 0 8 ? |
| 5 | 0 1 1 |
| 6 | 2 |

The missing number is ☐

**18** The bar graph summarises the shoe sizes for 25 students.

Shade one bubble




What percentage of students has a shoe size smaller than 9?

11% ○ 44% ○ 64% ○ 88% ○

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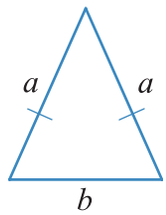
**19** The perimeter, $P$, for this isosceles triangle is given by $P = 2a + b$.




What rule could be used to find $a$?

$a = \frac{P-b}{2}$ ○ $a = \frac{P}{2} - b$ ○ $a = b - \frac{P}{2}$ ○ $a = \frac{b-P}{2}$ ○

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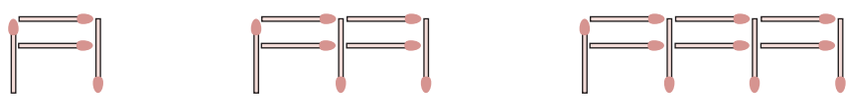
**20** Sue used matches to make a shape pattern.



Shape 1 Shape 2 Shape 3

The number of matches used to make each shape is given in the table.

| Shape number ($S$) | 1 | 2 | 3 |
|---|---|---|---|
| Number of matches ($N$) | 4 | 7 | 10 |

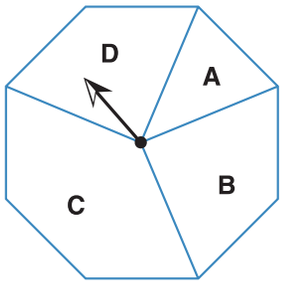
Which one of the following rules gives the number of matches, $N$, in terms of the shape number, $S$, for all shapes in the pattern?

$N = 4S - 2$ ○ $N = 3S + 1$ ○ $N = 2S + 3$ ○ $N = S + 3$ ○

**21** A spinner is made from a regular octagon and an arrow.

Shade one bubble

After 160 spins, what is the expected number of times that the arrow will point to section **A**?




- ○ 10
- ○ 20
- ○ 40
- ○ 80

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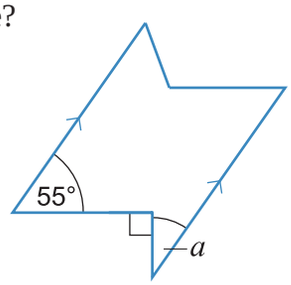
**22** What is the value of $a$ in this six-sided shape?




- ○ 30°
- ○ 35°
- ○ 40°
- ○ 45°

---

**23** $0.3 \times 1.5 =$

- ○ 0.0045
- ○ 0.045
- ○ 0.45
- ○ 4.5

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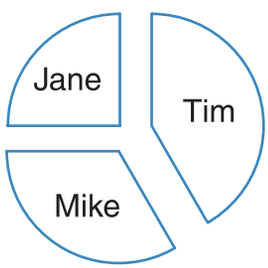
**24** Mike, Jane and Tim shared a pizza.

Write your answer in the boxes

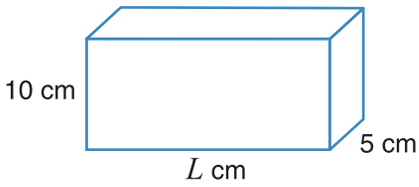
Mike ate $\frac{1}{3}$ of the pizza.

Jane ate $\frac{1}{4}$ of the pizza.




What fraction of the pizza was left for Tim? $\frac{\square}{\square}$

**25**




Write your answer in the box

The volume of this rectangular box is 600 $cm^3$.

What is the length, $L$, of the box?

[ ] cm

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**26**

Which one of the following is closest to the value of $3.9^2 + \sqrt{142}$ ?

Shade one bubble

| 8 + 71 | 16 + 71 | 8 + 12 | 16 + 12 |
|---|---|---|---|
| ⬭ | ⬭ | ⬭ | ⬭ |

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**27**

Three fair coins are tossed at the same time.

What is the probability of **at least two** tails?

| $\frac{1}{2}$ | $\frac{1}{6}$ | $\frac{3}{8}$ | $\frac{4}{27}$ |
|---|---|---|---|
| ⬭ | ⬭ | ⬭ | ⬭ |

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**28**

$\sqrt{\frac{36}{64}} =$

| $\frac{6}{32}$ | $\frac{3}{8}$ | $\frac{9}{16}$ | $\frac{6}{8}$ |
|---|---|---|---|
| ⬭ | ⬭ | ⬭ | ⬭ |

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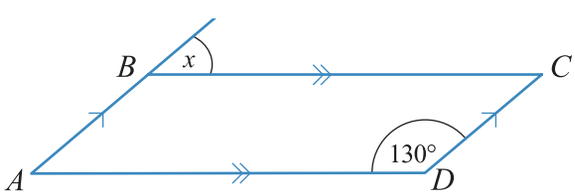
**29**

*ABCD* is a parallelogram.

$\angle ADC$ is 130°.

What is the value of $x$?

[ ] °




Write your answer in the box

**30** Which rule can be used to calculate $y$ from $x$ for all pairs in the following table?

| $x$ | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| $y$ | 2 | 4 | 8 | 16 |

Shade one bubble

- ⬭ $y = 2x$
- ⬭ $y = 8x$
- ⬭ $y = x^2$
- ⬭ $y = 2^x$

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**31** 150 000 000 can be expressed as

$1.5 \times 10^7$ ⬭ $1.5 \times 10^8$ ⬭ $1.5 \times 10^9$ ⬭ $1.5 \times 10^{10}$ ⬭

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**32** 55% of a backyard is lawn. The area of the lawn is 11 m$^2$.

What is the area of the backyard?

9 m$^2$ ⬭ 10 m$^2$ ⬭ 20 m$^2$ ⬭ 45 m$^2$ ⬭

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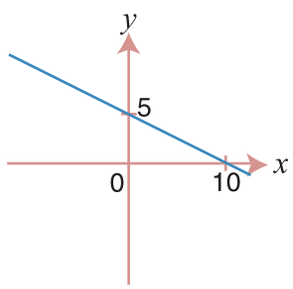
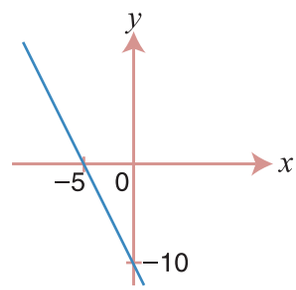
**33** Which one of the following is the graph of $y = 2x - 10$?




⬭

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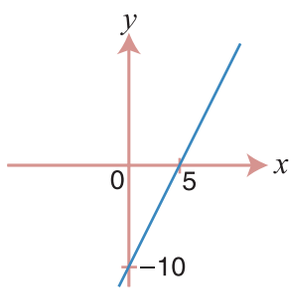


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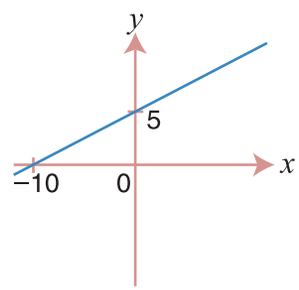
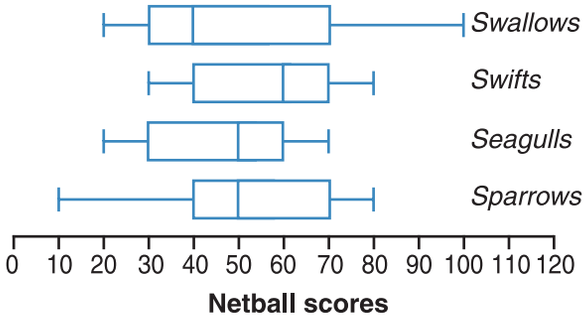



⬭

**34** The box plots summarise the total number of goals scored by four netball teams in ten games.

Shade one bubble




Which two teams have the same range for the total number of goals scored?

- Swallows and Sparrows
- Swifts and Sparrows
- Seagulls and Sparrows
- Swifts and Seagulls

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**35** $5x - 3(x - 4) =$

- $2x - 4$
- $2x + 4$
- $2x - 12$
- $2x + 12$

---

**36** $\dfrac{2^8 \times 3^6}{2^4 \times 3^2} =$

- $2^2 \times 3^3$
- $2^4 \times 3^3$
- $2^4 \times 3^4$
- $2^{12} \times 3^6$

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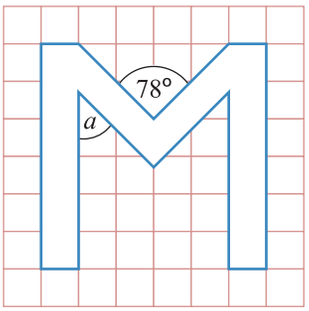
**37** An acceptable level of water pollution is **less than** 1000 bacteria per 100 ml of water.

Which one of the following levels is acceptable?

- 500 bacteria per 40 ml of water
- 900 bacteria per 80 ml of water
- 1500 bacteria per 160 ml of water
- 2000 bacteria per 180 ml of water

**38** Each line in the letter **M** below is parallel to at least one other line.




Shade one bubble

What is the value of angle *a* in the letter **M**?

12° ○ 24° ○ 39° ○ 78° ○

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**39** The values of $x$ and $y$ for which

$$y = 5x + 7$$

and

$$y = 3x + 5$$

are both true are

- ○ $x = 1, y = -2$
- ○ $x = -1, y = 2$
- ○ $x = 2, y = -1$
- ○ $x = -2, y = 1$

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**40** The lengths of the sides of triangle *ABC* are 8, 6 and 9 metres as shown.

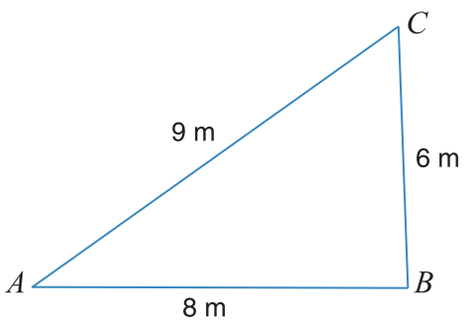


Diagram is not drawn to scale

What can be concluded about angle *ABC*?

- ○ The angle is less than 90°
- ○ The angle is equal to 90°
- ○ The angle is greater than 90°