

FOR THE STUDENT

Comprehensive Assessment of Mathematics Strategies (CAMS Series) is a maths program that gives you practice with 12 maths strategies. In *Comprehensive Assessment of Mathematics Strategies, Book 7*, you will complete ten maths lessons. Each lesson has a maths theme and 12 questions about the theme. Each question provides you with practice of a particular maths strategy. After you have finished the first five lessons, you will complete a self-assessment. The self-assessment will help you determine how well you are doing and what goals you need to set to improve your maths skills. After you finish the last five lessons, you will complete another self-assessment. This self-assessment will help you determine how well you met your goals. *Comprehensive Assessment of Mathematics Strategies, Book 7* can help you become a better problem-solver. You will come to understand the important information you must look for as you prepare to solve any and all problems.

This *Comprehensive Assessment of Mathematics Strategies* book was prepared for students by Robert G. Forest.

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LESSON 1

Happy birthday, Mariko

Mariko celebrated her birthday with seven classmates. The highlight of her party was treating her friends to a meal at Pizza Palace, one of their favourite restaurants. After eating at Pizza Palace, the partygoers went to Mariko's house, where they played games and ate all the birthday cake. Now do numbers 1 to 12.



1. Mariko has an ancestor who was born 243 years ago on the same month and day as Mariko was born. Which of these expresses this number in exponential notation?

- (A) 5^3
- (B) 3^5
- (C) $5^1 \times 3^1$
- (D) $3^2 + 3^3$

3. Mariko's mother used ribbon to wrap three birthday gifts. She had three ribbons and each was 90 centimetres long. She used $\frac{8}{9}$ of the first ribbon, $\frac{2}{3}$ of the second ribbon, and $\frac{5}{6}$ of the third ribbon. How many metres of ribbon did she use?

- (A) 215 centimetres
- (B) 200 centimetres
- (C) 195 centimetres
- (D) 220 centimetres

2. Mariko's sister is 20.15 years old. Mariko's brother is 11.93 years old. How many times older is Mariko's sister than Mariko's brother? Estimate your answer to the nearest tenth.

- (A) 1.6 times
- (B) 1.3 times
- (C) 1.4 times
- (D) 1.7 times

4. You will need information from problem 2 to solve this problem.

What is the actual difference between the ages of Mariko's sister and Mariko's brother?

- (A) 32.08 years
- (B) 8.22 years
- (C) 9.22 years
- (D) 9.08 years

5. Mariko celebrated part of her birthday with 7 friends at Pizza Palace. Each person had 3 slices of pizza and a juice drink. Mariko's father ordered 3 pizzas at \$12.95 each and juice drinks at \$1.20 each. Mariko's father had no pizza or juice drink. They left a tip of 10% of the total. What was the total cost of Mariko's birthday outing?

- (A) \$38.85
- (B) \$48.45
- (C) \$48.25
- (D) \$53.30

7. Mariko's birthday party began at 2.45 p.m. and ended at 7.15 p.m. How long did the party last?

- (A) $4\frac{1}{2}$ hours
- (B) $3\frac{5}{6}$ hours
- (C) $4\frac{3}{4}$ hours
- (D) $5\frac{2}{3}$ hours



6. After the pizza party, Mariko and her friends returned to her house to play table tennis. The surface area of the table tennis table is 41,648 square centimetres. Which of these is another way to express the same surface area? Round your answer to the nearest tenth.

$$1 \text{ m}^2 = 10,000 \text{ cm}^2$$

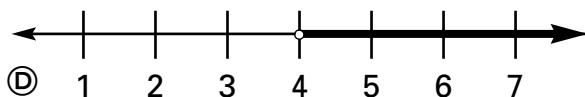
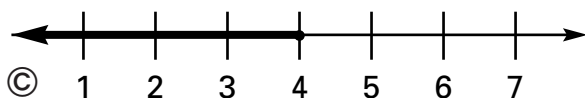
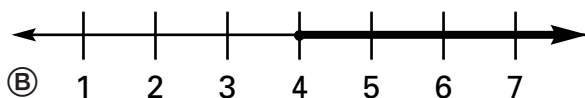
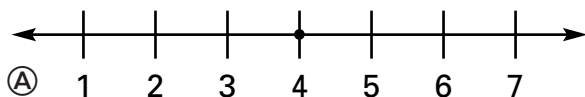
- (A) 41.1 m^2
- (B) 4.1 m^2
- (C) 4.2 m^2
- (D) 416.5 m^2



8. The distance from Pizza Palace to Mariko's house is 2.7 kilometres. Mariko and her friends walked the distance home. How many centimetres did they walk?

- (A) 2,700,000 cm
- (B) 5400 cm
- (C) 2700 cm
- (D) 270,000 cm

9. Mariko drew one of the number lines below to indicate that 4 or fewer of her friends played a computer game at the party. Which number line indicates that $x \leq 4$?



10. Mariko's friend Jung poured his juice drink into a cone-shaped cup. The cone cup has a diameter of 9 centimetres and a height of 11 centimetres. What is the volume of the cup?

$$V = \frac{1}{3}\pi r^2 h$$

- (A) 932.58 cm^3
 (B) 233.145 cm^3
 (C) 699.435 cm^3
 (D) 348.257 cm^3

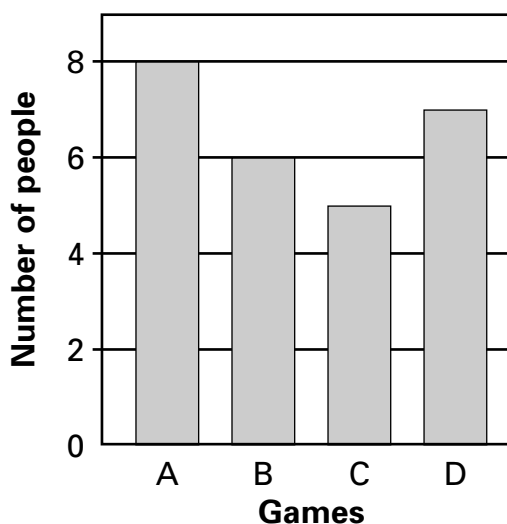
11. For a game, Mariko's mother put 15 green blocks, 20 red blocks, 20 blue blocks and 5 yellow blocks into a party bag. The game requires each partygoer to reach inside the bag without looking, and select a block.

If the selected block is yellow, the partygoer wins a prize. What are the chances of a partygoer selecting a yellow block?

- (A) $\frac{2}{3}$
 (B) $\frac{1}{4}$
 (C) $\frac{5}{6}$
 (D) $\frac{1}{12}$

12. Mariko and her 7 friends played four party games at four different times. What percentage of the partygoers played game C?

Games and players

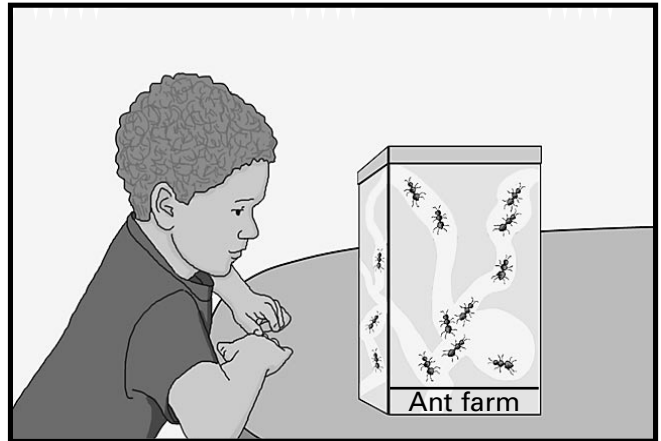


- (A) 85.5% (C) 62.5%
 (B) 75% (D) 100%

LESSON 2

Marco gets the bugs out

In year five, Marco became interested in the study of insects, after preparing a science-fair project on insect defences. Since then, he has done research on insect behaviour, flight and stages of development. This year, at secondary school, he is studying insect classification, genetics and ecology. If Marco continues his current interest in insects, he could very well become an entomologist. Now do numbers 1 to 12.



1. Marco read that the actual number of living insect species is probably about 3 million. Which expression is equivalent to 3 million?

- (A) 10×3^6
- (B) $(3 \times 1) + (10 \times 6)$
- (C) $(6 \times 10) \times (3 \times 6)$
- (D) 3×10^6

3. Marco observed four nesting groups of ants. The first group cleared a grassy surface area measuring 10.46 square metres. The second group cleared a surface area measuring 12.72 square metres. The third group cleared a surface area measuring 28.95 square metres and the fourth group cleared a surface area measuring 22.47 square metres. What was the total surface area cleared by the four groups of ants?

- (A) 74.60 m^2
- (B) 59.97 m^2
- (C) 48.51 m^2
- (D) 53.31 m^2

2. Marco learned that the number of insect species identified to date is estimated to be 750,000. Which number below can be rounded to 750,000?

- (A) 750,776
- (B) 749,421
- (C) 749,672
- (D) 750,897

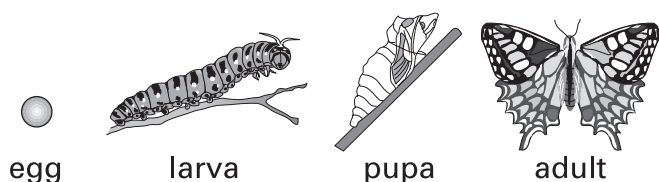
4. Marco calculates that there are more than 2.5×10^5 species of beetles. If about 1.8×10^4 beetles inhabit Australia, which expression shows how many species of beetles inhabit the other parts of the world?

- (A) 2.32×10^3
- (B) 2.32×10^5
- (C) 23.2×10^3
- (D) 23.2×10^5

5. You will need information from problem 2 to solve this problem.

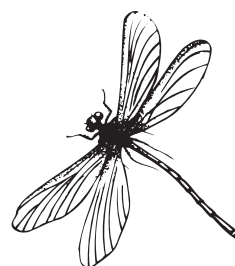
Marco knows that 85% of the number of identified insect species develop by the process of complete metamorphosis. About how many identified species develop in this way?

- (A) 637,500 insects
- (B) 112,500 insects
- (C) 562,500 insects
- (D) 187,500 insects



7. Marco learned that some insects in flight vibrate their wings at speeds ranging from 600 to 1000 beats per second. If this rate continued for one minute, what would be the average number of beats per minute of flight?

- (A) 24,000 beats
- (B) 36,000 beats
- (C) 800 beats
- (D) 48,000 beats



6. Myrmecid wasps are very tiny insects, about 0.04 cm long. Marco figured the number of myrmecid wasps that could be set side by side in a line $\frac{3}{5}$ cm long. How many wasps would be in the line?

- (A) 18 wasps
- (B) 15 wasps
- (C) 16 wasps
- (D) 17 wasps

8. Marco knows that insects vary widely in size. Some tropical stick insects grow to be 30 centimetres long. About how many millimetres are equivalent to 30 centimetres?

- (A) 30 mm
- (B) 300 mm
- (C) 3 mm
- (D) 3000 mm