Book 2

Mastering Mathematical Reasoning

Selective and Scholarship Tests

- Improves problem solving abilities
- Helps comprehension and application of mathematical reasoning
- Develops critical thinking to understand mathematics in a more meaningful way

A
FIVE SENSES
PUBLICATION

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SAMPLE

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Test 1

1. Joyce made 12 of her first 30 shots in the first three games of this basketball season, so her seasonal shooting average was 40%.
   In her next game, she took 10 shots and raised her seasonal shooting average to 50%.

   How many of these 10 shots did she make?

   A 5

   B 6

   C 8

   D 9

   E 10

2. Two 600 mL pitchers contain orange juice.
   One pitcher is $\frac{1}{3}$ full and the other pitcher is $\frac{2}{5}$ full.
   Water is added to fill each pitcher completely, then both pitchers are poured into one large container.

   What amount of the mixture in the large container is orange juice?

   A 1200 mL

   B 500 mL

   C 440 mL

   D 240 mL

   E 200 mL

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3. A notebook costs $4.50 and a calculator costs $24.00.

   Joe buys three notebooks and a calculator and pays with a $50 note.
   The shop assistant has only 50 cent, $1 and $2 coins and no notes.
   Joe received three 50 cent coins.

   What is the greatest number of $2 coins that Joe could have received?

   A 2

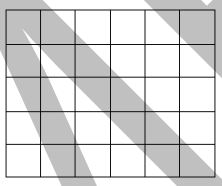
   B 3

   C 4

   D 5

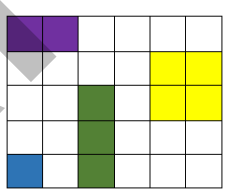
   E 10

4. Flora draws a rectangle 6 cm long and 5 cm wide.



   She wants to cut some squares out of the rectangle to make a new shape.

   Flora wants the perimeter of the new shape to be same as the original rectangle.



   Before cutting, she draws some small shapes that she plans to cut.

   How many of the small shapes can be cut out to meet Flora's requirements?

   A 0

   B 1

   C 2

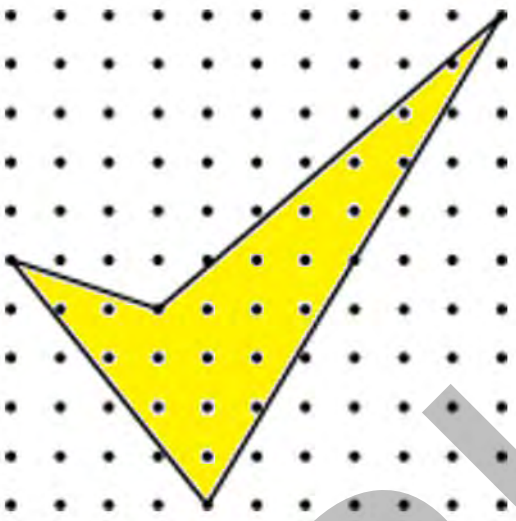
   D 3

   E 4

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5. What is the area enclosed by the geoboard quadrilateral below?



A 15 units^2

B 18.5 units^2

C 22.5 units^2

D 23 units^2

E 41 units^2

6. Julie has 1 litre and 250 millilitres of milk in her glass.
Steven has 2 litres and 56 millilitres of milk in his glass.
Jayden has 600 millilitres of milk in his glass.

If they wanted to share the total amount of milk equally between them, what volume of milk will each person get?

A 1 L 32 mL

B 1 L 302 mL

C 1 L 47 mL

D 1 L 470 mL

E 3 L 27 mL

SAMPLE

Solutions

TEST 1

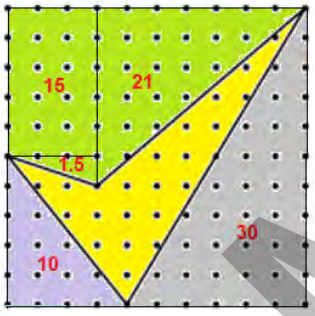
1. **C**: 50% of 40 shots is 20 shots.
   In the first 3 games she scored 12. In the fourth game, she scored 8.

2. **C**: $\frac{1}{3}$ of 600 mL = 200 mL
   $\frac{2}{5}$ of 600 mL = 240 mL
   200 + 240 = 440 mL

3. **D**: The change = \$50 – (3 x 4.50 + \$24) = \$12.50
   \$12.50 – 3 x 50c = \$11.00
   There could be maximum of 5 \$2 coins Joe received.

4. **C**: Only the purple and blue shapes can be cut and still maintain the same perimeter as the original rectangle.

5. **C**: The area of the yellow section = 100 – green area – purple area – grey area
   = 100 – 37.5 – 10 – 30 = 22.5 units^2.



6. **B**: The average = (1250 mL + 2056 mL + 600 mL) ÷ 3 = 3906 mL ÷ 3
   = 1302 mL = 1 L 302 mL

7. **D**: Statement 1: TRUE. The percentage change in urban house = 8%, rural houses = 1%. 7% is the greatest difference.
   Statement 2: TRUE. The decrease in year 2 is -2% which is the greatest decrease of the urban houses.
   Statement 3: FALSE. The actual prices are not known.

8. **A**: If the phone is on standby, the battery lasts for 24 hours.
   If the phone is active, the battery lasts for 3 hours.
   1 hour of active use is equivalent to 8 hours of standby time.
   9 hours on + 8 hours on (1 hour of actual use) = 17 hours
   24 h – 17 h = 7 hours of standby time left.

9. **A**: 12 meals = enough for 18 people
   2 meals = enough for 3 people
   8 meals would be enough for 12 people.

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