NSW Selective High School Placement Test

Mathematical Reasoning — Practice Paper

Questions: 35

Time allowed: 40 minutes

Calculator: not permitted

Instructions: Each question has five answer choices (A, B, C, D, E). Choose the one best answer.

Paper ID: seed-50001

Figures are drawn for clarity; where a figure is marked “not to scale”, work from the labelled values.

1. A movie finishes at 12:35 (24-hour time). It ran for 5 hours 15 minutes. What time did it start (give your answer in 12-hour format)?

(A) 7:20 am

(B) 5:50 pm

(C) 7:35 am

(D) 7:30 am

(E) 7:20 pm

2. Two runners start together on a circular running track. One runner completes a lap every 20 seconds and the other every 15 seconds. After how many seconds will they next be together at the starting line?

(A) 35 seconds

(B) 300 seconds

(C) 20 seconds

(D) 5 seconds

(E) 60 seconds

3. What is the largest three-digit whole number that is a multiple of both 9 and 8?

(A) 999

(B) 992

(C) 864

(D) 990

(E) 936

4. Two three-digit whole numbers are multiplied together. What are the possible numbers of digits in the product?

(A) 5 only

(B) 6 only

(C) 5 or 6

(D) 4 or 5

(E) 6 or 7

5. A number sequence is generated by the following rule: starting from the 1st term, subtract 90, then add 48, then subtract 90, then add 48, and so on, alternating. The 6th term of the sequence is 402. What was the 1st term?

(A) 486

(B) 528

(C) 612

(D) 438

(E) 576

6. Five runners recorded the following times in a 100-metre sprint (in seconds): Ava: 58.936 s; Isla: 59.05 s; Noah: 59.011 s; Mia: 58.935 s; Ben: 59.07 s. Who was the fastest (shortest time)?

(A) Ava

(B) Isla

(C) Noah

(D) Mia

(E) Ben

7. A flight leaves Los Angeles at 7:00 pm on Sunday and takes 14 hours to reach Sydney. Sydney is 18 hours ahead of Los Angeles. What is the local time in Sydney when the flight lands?

(A) 3:00 am on Sunday

(B) 3:00 am on Monday

(C) 3:00 am on Tuesday

(D) 9:00 am on Monday

(E) 3:00 pm on Sunday

8. In a sequence, each term is obtained by multiplying the previous term by the same whole number. The 1st term is 9 and the 6th term is 288. What is the 2nd term?

(A) 11

(B) 18

(C) 36

(D) 9

(E) 148

9. Consider these three statements.
1) 5/6 - 3/4 < 1/4
2) 3/5 - 2/5 < 1/3
3) 1/2 - 1/6 > 1
Which of the statements are correct?

(A) 2 only

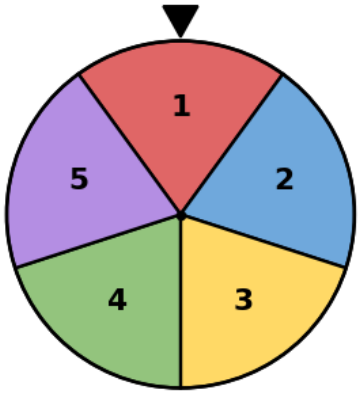
(B) 1 only

(C) 1, 2 and 3

(D) 1 and 2

(E) 3 only

10. The spinner shown has 5 equal sectors labelled 1 to 5. The spinner is spun twice. What is the probability that the two spins show the same number?



(spun twice)

(A) 2/5

(B) 6/25

(C) 4/25

(D) 1

(E) 1/5

11. A book has some pages. On the first day Rina reads 3/4 of the pages. On the second day she reads 1/3 of the remaining pages. She has 40 pages left to read. How many pages does the book have?

(A) 160 pages

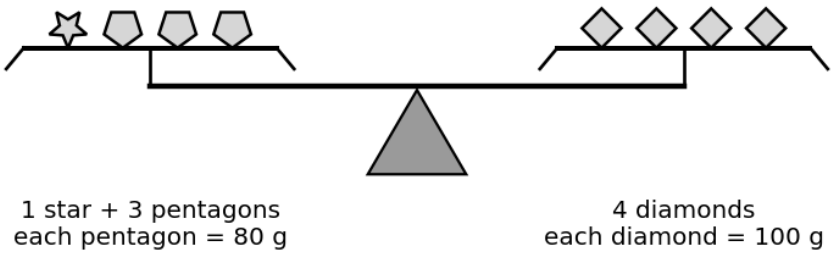
(B) 200 pages

(C) 80 pages

(D) 240 pages

(E) 237 pages

12. The balance scale shown is exactly level. The left pan holds 1 star and 3 pentagons; the right pan holds 4 diamonds. One pentagon weighs 80 g and one diamond weighs 100 g. What is the weight of one star?



[diagram not to scale]

(A) 106 g

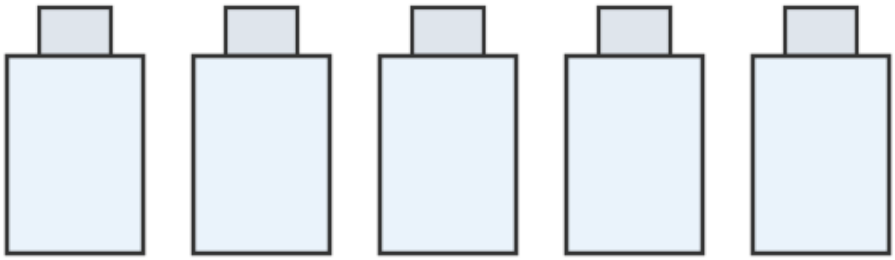
(B) 160 g

(C) 80 g

(D) 260 g

(E) 100 g

13. A pack contains 10 bottles of juice, each 150 mL. After 100 mL is poured out for a recipe, what is the total remaining volume in L?



10 × 150 mL (10 in total, 5 shown)

(A) 1.4 L

(B) 1.5 L

(C) 14 L

(D) 1.25 L

(E) 2.4 L

14. Quincy has 2 times as many biscuits as Yasmin. Sam has 2/3 times as many biscuits as Yasmin. How many times as many biscuits does Quincy have compared to Sam?

(A) 1/3

(B) 2

(C) 3

(D) 2/3

(E) 2 2/3

15. A bag contains apple, banana and cherry counters (and no others). The probability of spinning (or picking) apple is 1/5, and the probability of banana is 3/10. What is the probability of cherry?

(A) 4/5

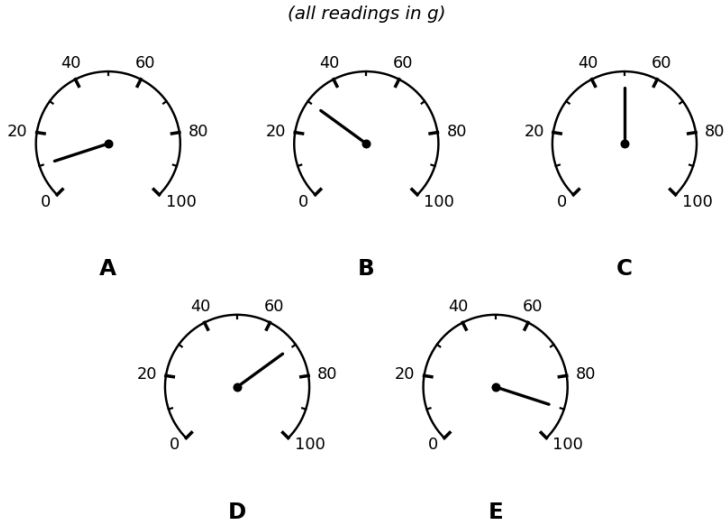
(B) 7/10

(C) 1/10

(D) 1/2

(E) 3/10

16. Five scales, labelled A to E, each show a reading in g. How much more does scale E read than scale B?



(A) 120 g

(B) 90 g

(C) 60 g

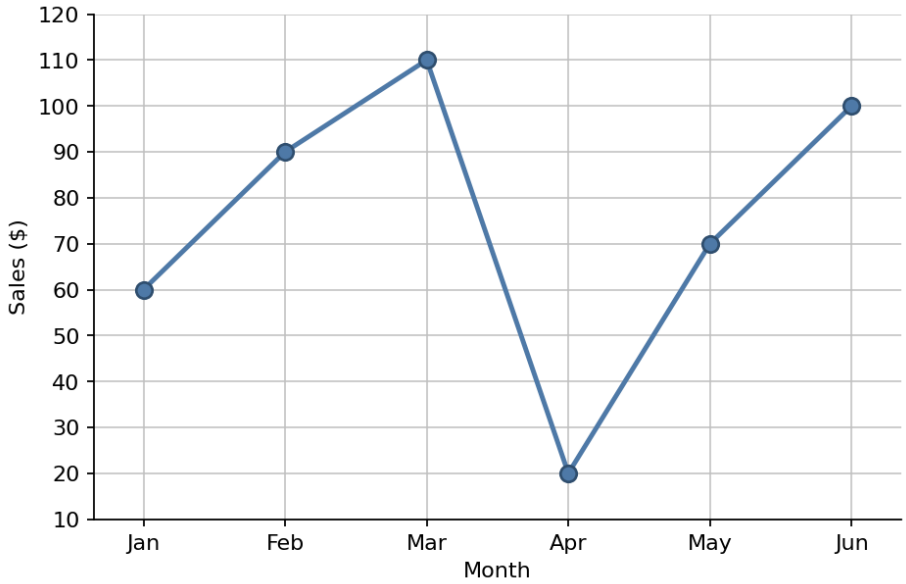
(D) 30 g

(E) 70 g

17. The line graph shows the monthly revenue of a shop. Consider these statements:

1. The revenue was lowest in Apr.
2. Between Apr and Jun, the revenue rose by $80.
3. Between Jan and Mar, the revenue rose by $40.

Which of the statements are true?



(A) 1 and 2 only

(B) 2 and 3 only

(C) 2 only

(D) 1 only

(E) 1 and 3 only

18. Each shape stands for a whole number. If $2 \times \triangle + 3 \times \bigcirc = 17$ and $\triangle + \bigcirc = 6$, what is the value of $\triangle + 2 \times \bigcirc$?

(A) 1

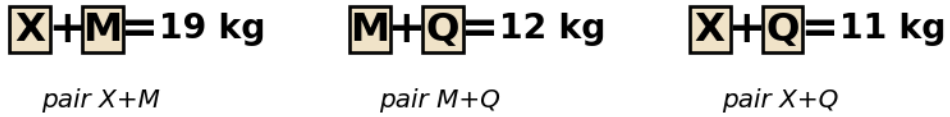
(B) 5

(C) 6

(D) 11

(E) 7

19. Three boxes labelled X, M and Q are weighed two at a time on a balance. Boxes X and M together weigh 19 kg. Boxes M and Q together weigh 12 kg. Boxes X and Q together weigh 11 kg. What is the weight of box X?



(A) 10 kg

(B) 2 kg

(C) 9 kg

(D) 12 kg

(E) 21 kg

20. Rhea walked down the main street with some money. At the bookshop she spent $22. At the supermarket she spent half of the money she had left. At the milk bar she spent $9. Rhea now has $14 left. How much money did Rhea start with?

(A) $5

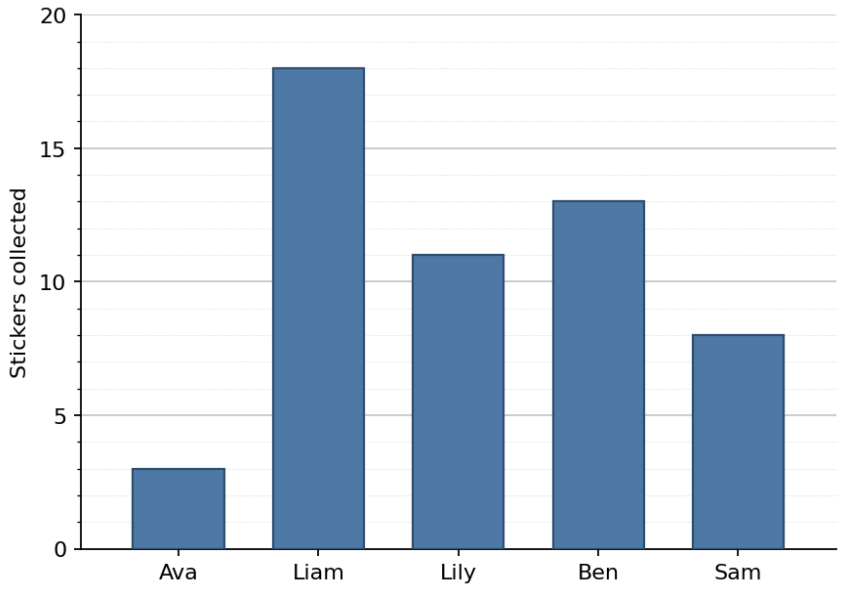
(B) $45

(C) $54

(D) $68

(E) $46

21. The bar graph shows the stickers each child collected. What is the median number of stickers?



(A) 11 stickers

(B) 10 stickers

(C) 18 stickers

(D) 3 stickers

(E) 12 stickers

22. Jia starts with a whole number. Jia's number is multiplied by 3, and then 6 is added. The result is at least 7 and at most 32. What is the sum of all the whole numbers Jia could have picked?

(A) 8

(B) 36

(C) 45

(D) 35

(E) 28

23. Four of the five digits below are placed into the four blanks so that both of these sentences are true:

__ + __ = 3

__ × __ = 24

The five digits are: 1, 2, 4, 6, 7. Which digit is NOT used?

(A) 1

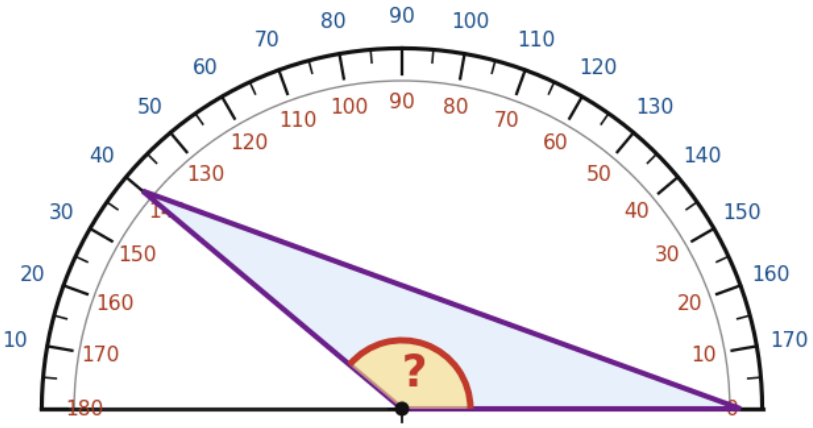
(B) 2

(C) 4

(D) 6

(E) 7

24. A triangle has one of its vertices at the centre of the protractor, with two sides running outwards along the directions shown. What is the size of the marked angle at that vertex?



(A) 40°

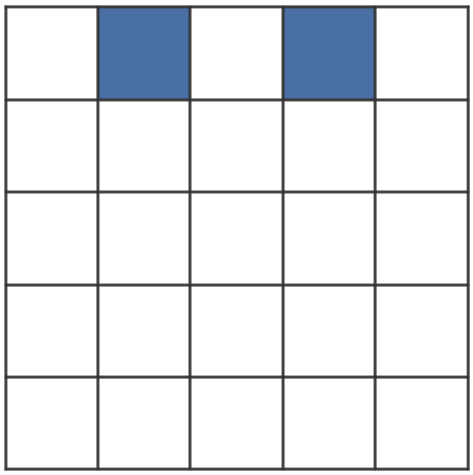
(B) 140°

(C) 130°

(D) 150°

(E) 135°

25. Some squares of the 5 by 5 grid below have been shaded. What is the smallest number of extra squares that must be shaded so that the completed pattern has exactly 2 lines of symmetry?



(A) 3

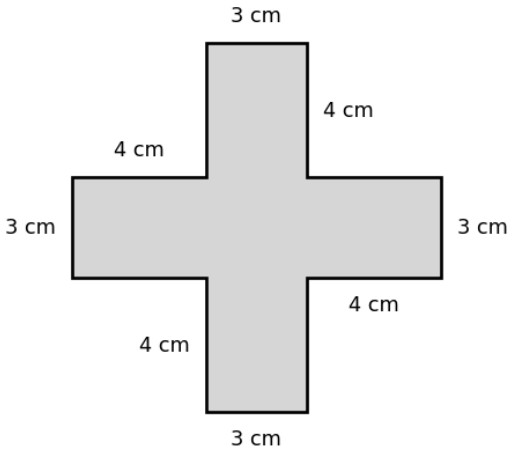
(B) 2

(C) 1

(D) 4

(E) 7

26. The plus-sign shape below is made from rectangles. What is the perimeter of the shape?



[diagram not to scale]

(A) 121 cm

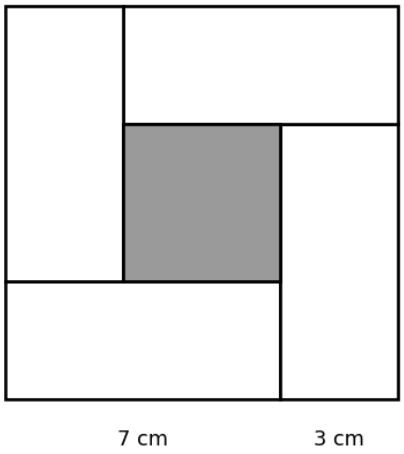
(B) 57 cm

(C) 38 cm

(D) 60 cm

(E) 44 cm

27. Four identical rectangles, each 7 cm by 3 cm, are arranged in a pinwheel pattern so that their outer edges form a square. Find the area of the small shaded square formed in the middle.



(A) 100 cm²

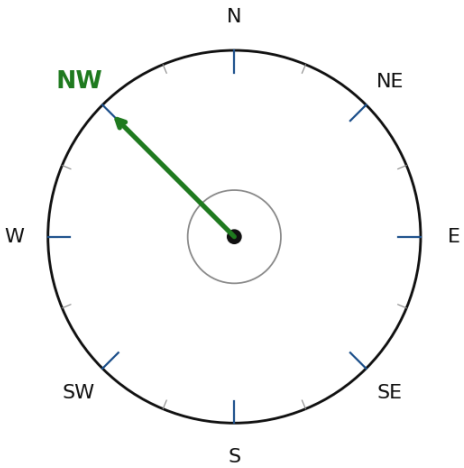
(B) 40 cm²

(C) 21 cm²

(D) 16 cm²

(E) 8 cm²

28. A hiker starts facing north-west (NW). She turns 45° anticlockwise, then turns 90° clockwise. In what direction is she now facing?



Hiker starts facing north-west (NW)

(A) S

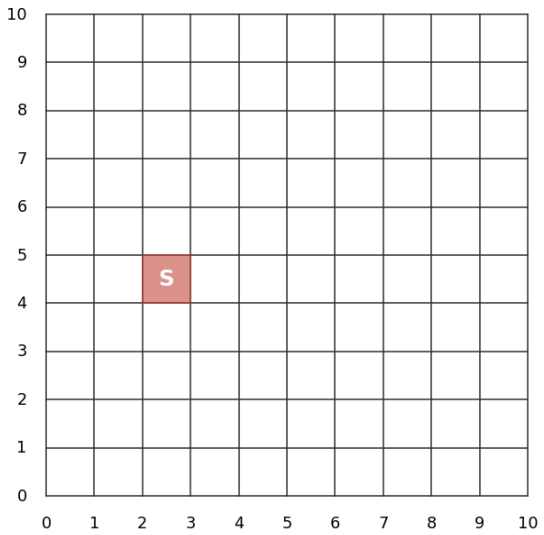
(B) E

(C) NE

(D) N

(E) NW

29. The grid shows a start cell S at (2, 4). A token moves through the cells as follows: right 4, up 5, down 2, left 2. On which cell does the token land? Coordinates are given as (x, y) of the cell, where (0, 0) is the bottom-left cell.



(A) (7, 4)

(B) (4, 7)

(C) (6, 7)

(D) (5, 7)

(E) (0, 7)

30. A 3-digit number has three different digits chosen from 0 to 9, and the sum of its digits is 18. The number is exactly divisible by 5. What is the largest such number? (digits may include 0 but the number must be a 3-digit number)

(A) 981

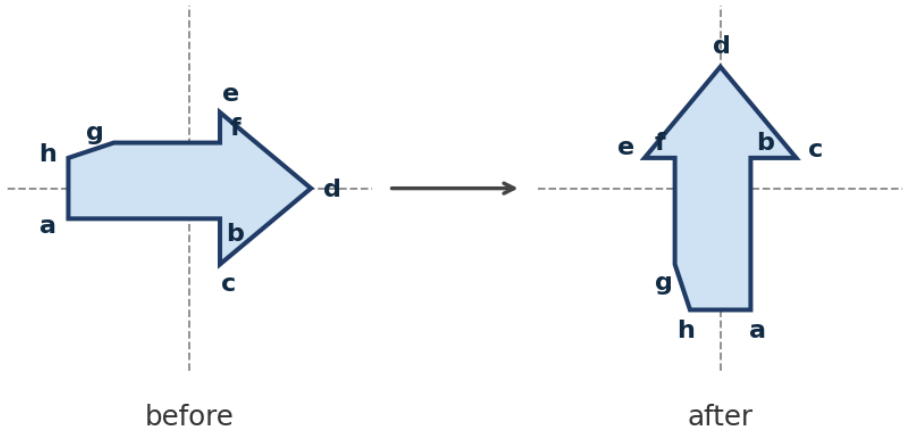
(B) 985

(C) 945

(D) 990

(E) 940

31. The figure on the left has been transformed to produce the figure on the right. Which single transformation was applied?



(A) rotation 90° clockwise

(B) rotation 180°

(C) rotation 270° clockwise (= 90° counter-clockwise)

(D) reflection in the vertical axis

(E) reflection in the horizontal axis

32. At a market stall, apples cost \$0.55 each, 3 for \$1.50, or 6 for \$2.75. What is the greatest number of apples you can buy with \$12?

(A) 21

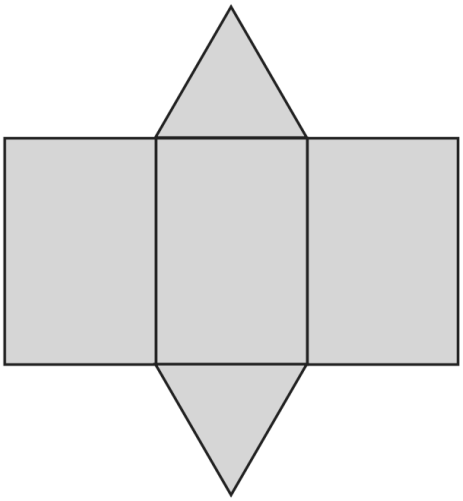
(B) 24

(C) 25

(D) 26

(E) 22

33. Which solid does the net below fold to form?



(A) pentagonal prism

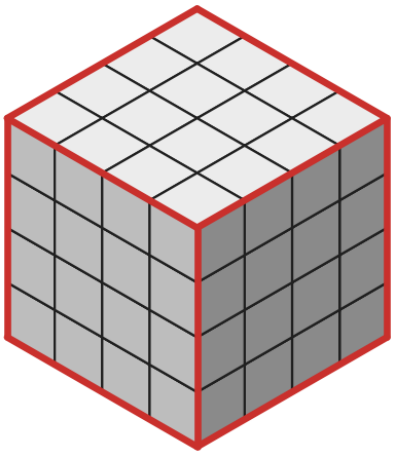
(B) square pyramid

(C) triangular prism

(D) cube

(E) rectangular prism

34. Every edge of the 4 × 4 × 4 cube below is painted red (shown in red in the picture). How many of the small cubes have paint on them?



4 × 4 × 4 cube (edges painted red)

(A) 48

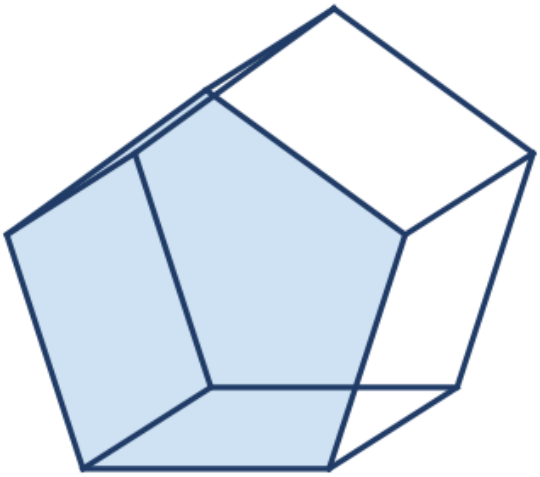
(B) 24

(C) 56

(D) 36

(E) 32

35. A regular pentagonal prism has each base edge of length 3 cm and a length (lateral edge) of 8 cm. What is the total length of all its edges?



(A) 55 cm

(B) 38 cm

(C) 23 cm

(D) 70 cm

(E) 30 cm

Where the answers are

There is no answer key in this file, and that is deliberate. The real NSW Selective Test is sat on a computer, and marking a paper by hand tells you a score but not much else. The same Mathematical Reasoning paper — the same questions, in the same order — can be sat online in a player built to mirror the test-day screen. It marks every question the moment the test ends and shows the working behind every answer, right and wrong.

https://www.selectivepapersnsw.com/papers/seed-50001

That is free for 24 hours and takes no card. It does ask for an email address, because the link has to go somewhere — unlike this PDF, which asks for nothing.

How we would use this paper

Read it first yourself. Seeing the questions at your own pace, on paper, is the fastest way to understand what the test actually asks of a ten- or eleven-year-old — and it is much easier to do that here than over your child's shoulder during a timed sitting.

Then have your child sit it on a screen, under the clock. Practising on paper for a computer-based test builds the wrong habits: no scribbling in margins, no scanning a whole page at once, and a countdown running in the corner. The format should not be the surprise on the day.

Whose paper this is

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