



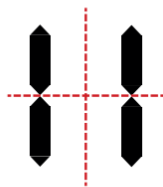
Topic 11 - Line of Symmetry

1

'Calculator numbers' are written in the style of digits on a calculator, as shown.



The calculator number eleven is the **smallest** two-digit number with **two** lines of symmetry.



Which of the numbers below is the largest two-digit calculator number that has just one line of symmetry?

- A 52
- B 83
- C 88
- D 96
- E 99



2



Tahnee is making a pattern out of white and black tiles.

She hasn't finished yet. She wants the finished pattern to have one vertical line of symmetry.

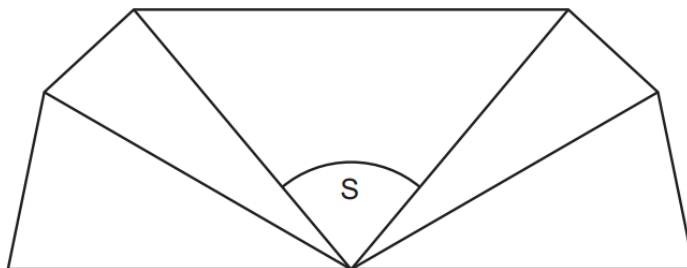
What is the smallest number of tiles she needs to add onto the right of the pattern?

- A** 2
- B** 3
- C** 6
- D** 8
- E** 9



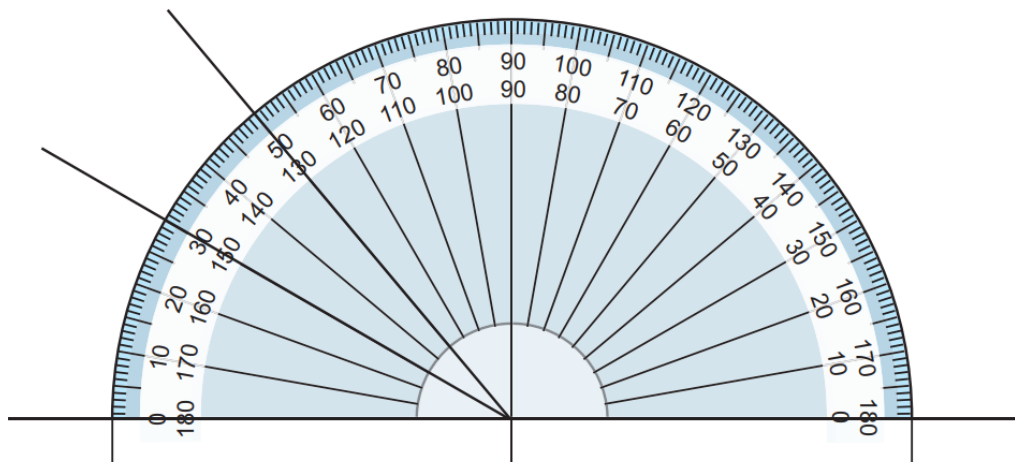
3

Noah is drawing an accurate copy of this shape:



The shape has one line of symmetry.

He starts drawing the shape as follows:



What is the size of angle S?

- A 50°
- B 80°
- C 90°
- D 100°
- E 130°



4

Brody is thinking of a quadrilateral.

The quadrilateral has:

- 1 no parallel sides
- 2 two sides of 5 cm and two sides of 8 cm
- 3 exactly one right angle

How many lines of symmetry does Brody's quadrilateral have?

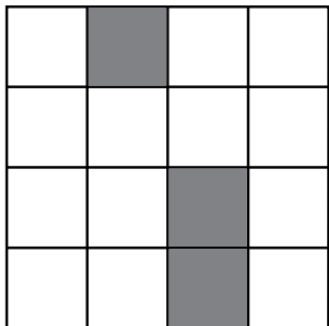
- A** 0
- B** 1
- C** 2
- D** 3
- E** 4



5

Alison shaded 3 small squares in the grid below.

She wants to shade extra squares to make a pattern with exactly four lines of symmetry.



What is the smallest number of extra squares she needs to shade?

- A 3
- B 5
- C 7
- D 9
- E 13






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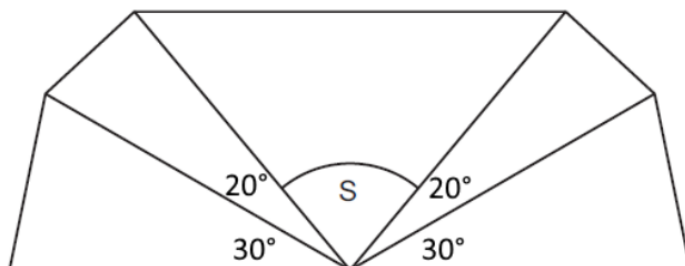
Answer Key

1	<p>We are trying to make the largest two-digit number we can, so we need to make the tens digit as large as possible.</p> <p>If we choose a 9 for the 'tens' digit, we can't make a line of symmetry. If we choose an 8 for the 'tens' digit, we need to choose a digit with a horizontal line of symmetry for the 'ones' digit.</p> <p>1, 3, 8 and 0 are the possible choices. If we choose 8, we would have the number 88, which has two lines of symmetry, so we should choose 3, which gives the correct answer B 83.</p> <div style="text-align: center;"></div>
2	<p>Starting from the middle of the pattern so far, we can look for where the line of symmetry could go. The first chance we have to make the pattern symmetrical is by placing the vertical line of symmetry through the centre of the group of three black tiles:</p> <div style="text-align: center;"></div> <p>Tahnee needs to add one black and one white tile to the right of the pattern:</p> <div style="text-align: center;"></div> <p>So Tahnee can add on two more tiles, and the correct answer is A 2.</p> <p>Alternatively, we can solve this by starting from the right and working out what tiles to add. Since the first tile is white, the last tile must also be white, but adding one white tile does not give a symmetric pattern. Since the second tile is black, the second-to-last tile must also be black, and that does give a symmetric pattern. So Tahnee can add on two more tiles.</p>



3

Reading off the protractor, Noah has constructed lines at 30° and then 20° further round at 50° . Since the shape has one line of symmetry, the angles in his shape must be 30° , 20° , S, 20° and 30° :



A straight angle is 180° so the missing angle S must be $180^\circ - 20^\circ - 30^\circ - 20^\circ - 30^\circ = 80^\circ$. So the correct answer is **B 80°** .

Alternatively, we could use the line of symmetry to work out that the two lines at each side of S will be at 50° and 130° on the protractor, and $130^\circ - 50^\circ = 80^\circ$.

4

B

5

D