Year 3 maths: Angles and right angles (Hard)

Maths · Shapes and space
Level: Hard

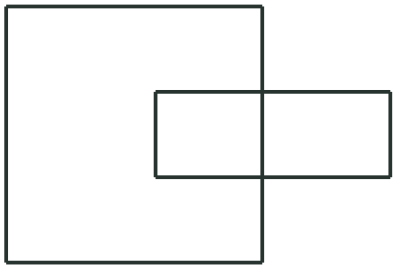
Student: _____ Date: _____

Instructions
- There are 10 questions. Read each one carefully.
- Write your answers on this paper. Use the space under a question to work it out.
- A grown-up can read a question aloud — that's fine.
- The answers are at the end. Check them together when you have finished.

Questions

1. A long rectangle crosses part way into a square from the side, as shown. How many right angles are in the design? Count every right angle: a square corner has 1, a T-join has 2 and a crossing has 4.

Answer: ☐ right angles



Working:

2. The smaller angle between the hands of a clock at 7 o'clock is...

Circle one answer.

- ○ **A** more than a straight angle
- ○ **B** between a right angle and a straight angle
- ○ **C** a straight angle
- ○ **D** a right angle
- ○ **E** less than a right angle

3. The smaller angle between the hands of a clock at 9 o'clock is...

Circle one answer.

- ○ **A** more than a straight angle
- ○ **B** a straight angle
- ○ **C** between a right angle and a straight angle
- ○ **D** a right angle
- ○ **E** less than a right angle

4. The minute hand starts at 12 and turns clockwise to 9. How many right angles has it turned through?

Answer: ☐ right angles

Working:

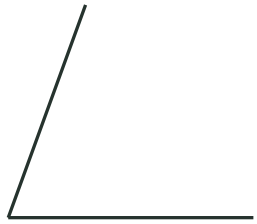
5. Count every right angle: a square corner has 1, a T-join has 2 and a crossing has 4. Leo makes three claims. 1. A square has 4 right angles. 2. A square turned on its corner has no right angles. 3. A rectangle with one straight line from its top side to its bottom side, meeting both sides at right angles, has 8 right angles. Which claims are correct?

Circle one answer.

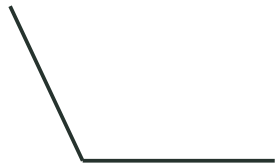
- ○ **A** claim 1 only
- ○ **B** claim 2 only
- ○ **C** claims 1 and 2 only
- ○ **D** claims 1 and 3 only
- ○ **E** claims 1, 2 and 3

6. Which angle is the biggest?

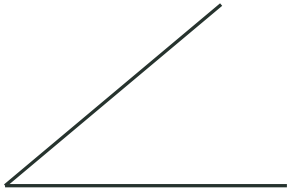
Circle one answer.



○ **A**



○ **B**



○ **C**



○ **D**



○ **E**

7. Mia folds a round paper circle in half, then in half again. She opens it out. What is the angle at the centre between two folds that are next to each other?

Circle one answer.

○ **A** less than a right angle

○ **B** between a right angle and a straight angle

○ **C** a full turn

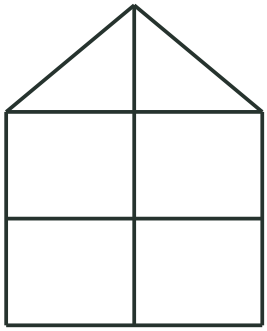
○ **D** a straight angle

○ **E** a right angle

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8. How many right angles are in this house-shaped design? Count every right angle: a square corner has 1, a T-join has 2 and a crossing has 4.

Circle one answer.



○ **A** 20 ○ **B** 15 ○ **C** 4 ○ **D** 12 ○ **E** 18

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9. The year 2026 is written in digital digits, as shown. How many right angles are used in writing it? Count every right angle: a square corner has 1, a T-join has 2 and a crossing has 4.

Circle one answer.

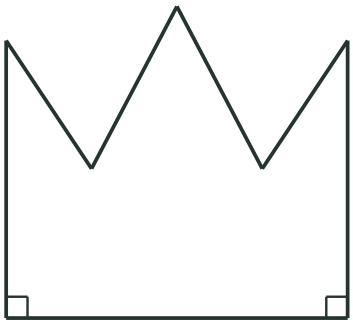


○ **A** 18 ○ **B** 17 ○ **C** 19 ○ **D** 20 ○ **E** 16

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10. This shape is a paper crown. How many of its angles inside the shape are less than a right angle?

Circle one answer.



○ **A** 3 ○ **B** 7 ○ **C** 5 ○ **D** 4 ○ **E** 2

Answer key

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1. 16 right angles

Corners: 4 + 4 = 8. The long rectangle's top and bottom sides each cross the square's right side: 2 crossings × 4 = 8. 8 + 8 = 16.

2. B — between a right angle and a straight angle

The short way from 7 to 12 is 5 gaps: more than 3, less than 6.

3. D — a right angle

From 9 to 12 is 3 gaps, a quarter of the clock: exactly a right angle.

4. 3 right angles

12 to 3, 3 to 6 and 6 to 9: 3 quarter turns, 3 right angles.

5. D — claims 1 and 3 only

1 is right. 2 is wrong: turning doesn't change angles. 3 is right: 4 corners, and the line meets the top and bottom sides at right angles in 2 T-joins (2 each): 4 + 2 + 2 = 8.

6. D

The biggest angle is the one that opens the widest, nearly to a straight line. Arm length does not change the size of an angle.

7. E — a right angle

Two folds cut the circle into 4 equal parts. A full turn split into 4 is a quarter turn each: a right angle.

8. E — 18

The 4 corners of the square part: 4. The up-and-down line crosses 2 lines (4 + 4 = 8) and meets the bottom in a T-join (2). The middle line makes 2 T-joins at the sides (2 + 2 = 4). The roof corners are not square. 4 + 8 + 2 + 4 = 18.

9. A — 18

2 has 4 corners: 4. 0 has 4 corners: 4. The second 2: 4. 6 has 4 corners and a T-join with 2: 6. 4 + 4 + 4 + 6 = 18.

10. A — 3

The three points of the crown are sharp: 3 angles less than a right angle. The two bottom corners are right angles, so they are not less than one. The two dips between the points bend into the shape: inside, they are wider than a straight line, so they are not either. 3.