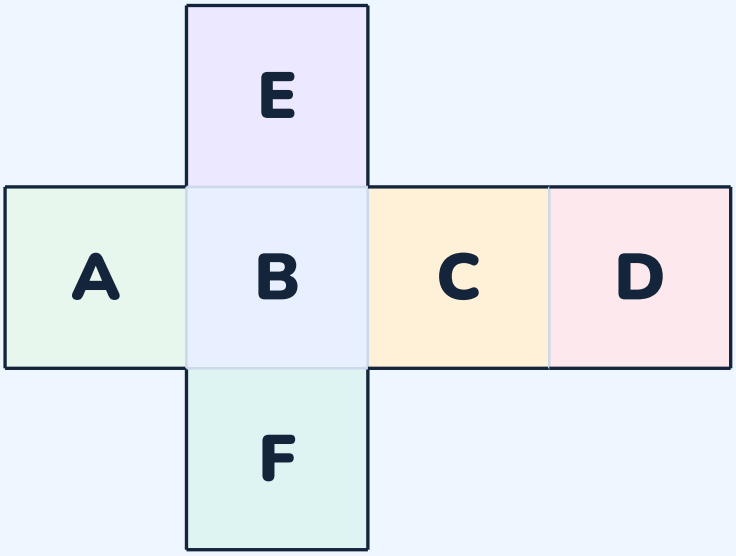
PIP 11+ / FREE PDF

CUBE NETS & FOLDING

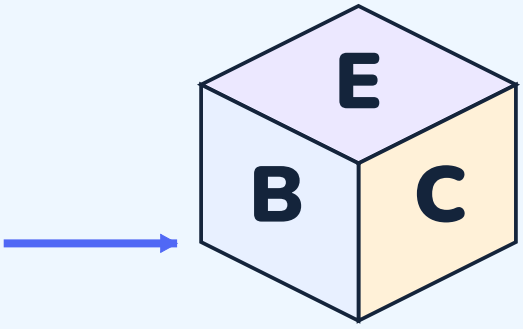
An 11+ non-verbal reasoning practice pack you can see, fold and solve.

10 PRINTABLE A4 PAGES

WORKED ANSWERS



FLAT NET



FOLDED VIEW

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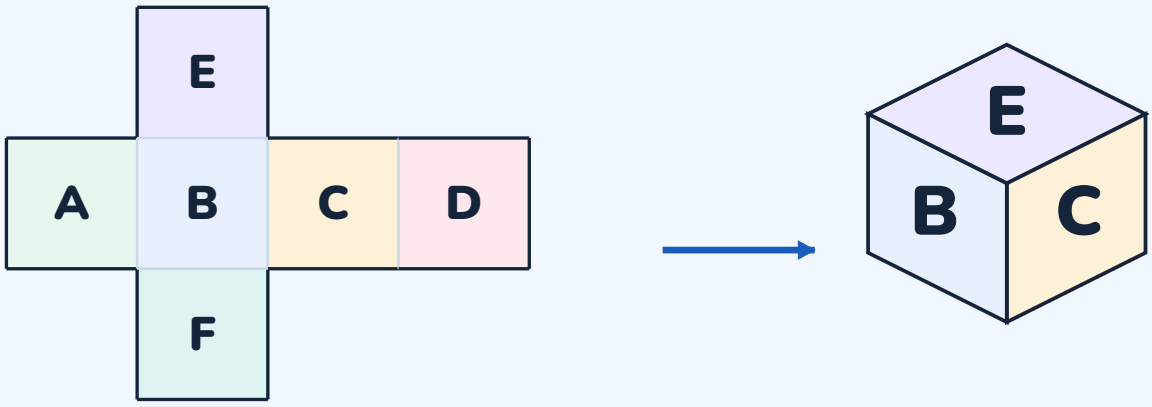
SCAN

01 / SEE THE SHAPE

What actually makes a cube net?

A cube net is six connected squares that fold into six different faces. Six squares alone are not enough: some layouts make faces overlap or leave a gap.



FLAT FOLDED

The three checks

01 Will it fold?

Look for an overlap. A 2 x 3 rectangle cannot wrap into a cube.

02 What is opposite?

Opposite faces cannot appear together in one three-face view.

03 Is it a mirror?

Three neighbouring faces still have to appear in the right order.

TRY BEFORE TURNING THE PAGE

In the drawing, imagine B on the front and E on top. Which letter becomes the right-hand face?

My prediction: _____

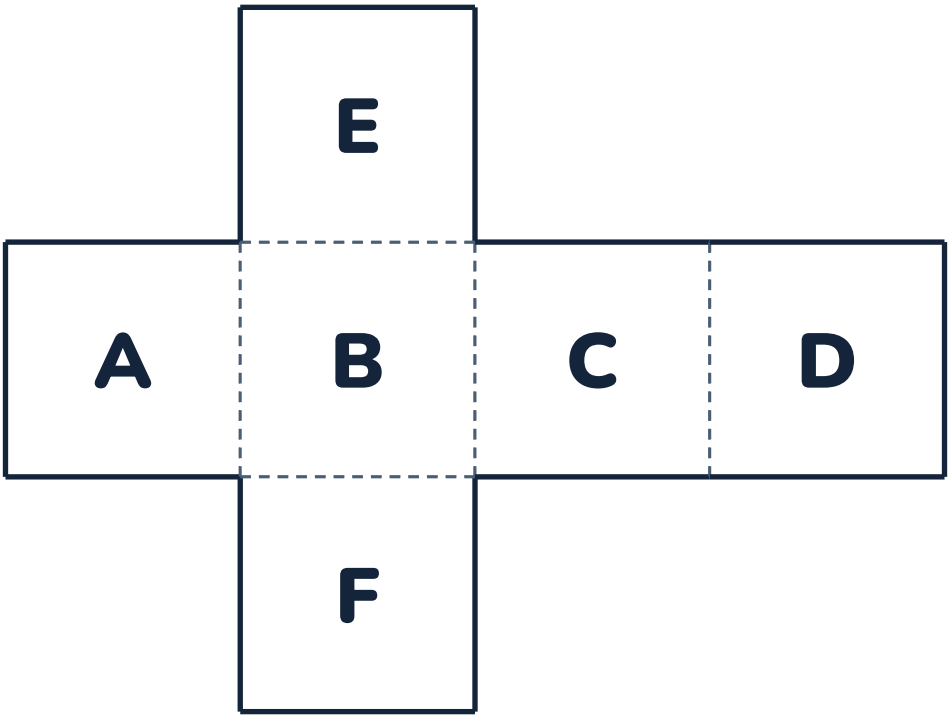
02 / HANDS-ON CHECK

Make a cube you can hold.

Predict first. Then fold this original Pip net and check your thinking with a real cube. Use ordinary A4 paper and tape; adult help with scissors is sensible.

CUT THE SOLID OUTSIDE EDGE

FOLD THE DASHED LINES



BEFORE YOU FOLD

Circle the three pairs you think will end up opposite. Opposite faces never touch along an edge.

Pair 1 _____ Pair 2 _____ Pair 3 _____

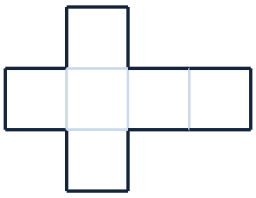
Now build it: cut around the solid outline. Place letters face-down, fold on each dashed hinge so the letters stay outside, and tape the outer edges. Which prediction did the real cube confirm?

03 / SPOT THE DUD

Six squares. Which ones fold?

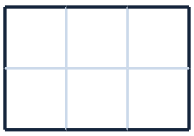
Tick every layout that can become a cube. A wrong one is a dud: at least two squares try to occupy the same face or the layout cannot close.

A



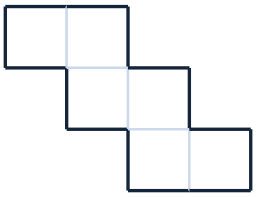
FOLDS ○ DOES NOT ○

B



FOLDS ○ DOES NOT ○

C

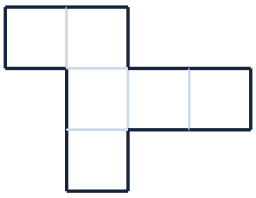


FOLDS ○ DOES NOT ○

D

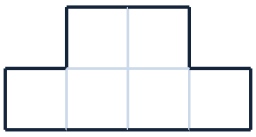
FOLDS ○ DOES NOT ○

E



FOLDS ○ DOES NOT ○

F



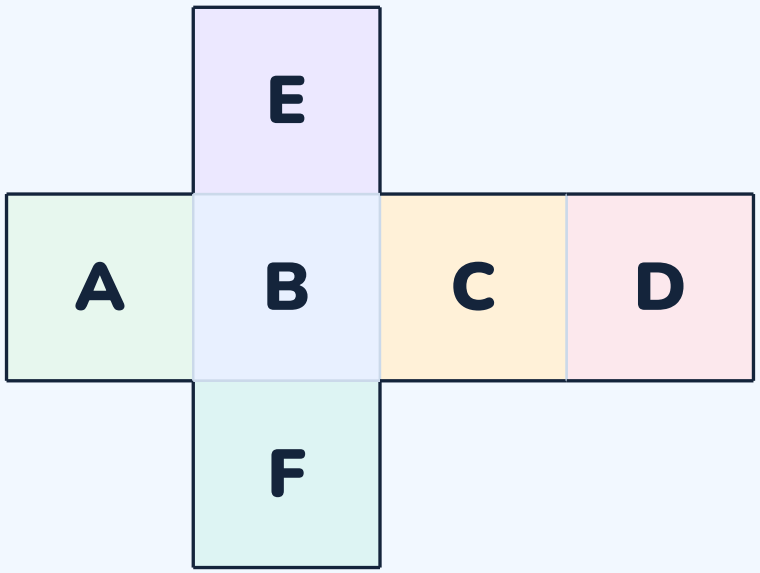
FOLDS ○ DOES NOT ○

A useful question: would any two squares land on the same side?

04 / OPPOSITE FACES

Find the faces you cannot see together.

Opposite faces sit back to back. They cannot share an edge, and they cannot both appear in the same three-face cube view.



One square between A and C in a straight run: **they will face away from one another.**

YOUR TURN

1. Write the opposite of each face.

A -> _____ B -> _____ E -> _____

2. If E is on top, which face must be underneath? _____

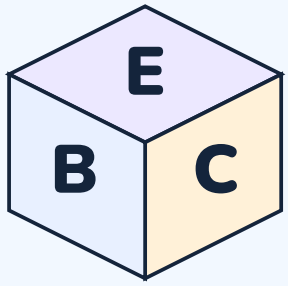
3. Could A and C appear together in one visible corner? _____

Check your answers after the next three pages.

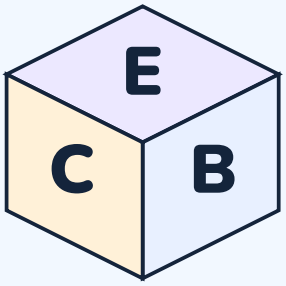
05 / CORNER ORDER

A turn is not a mirror.

Three faces may all touch and still appear in the wrong order. Keep one face on top and follow the other two around the corner. A mirror swaps them.



POSSIBLE

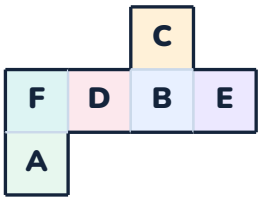


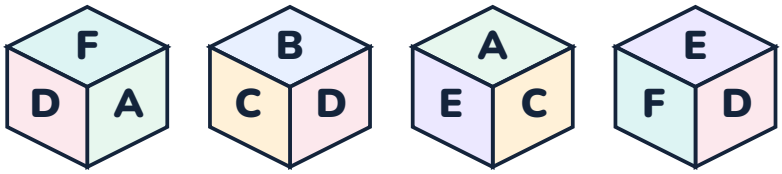
MIRROR - IMPOSSIBLE

With E on top, B and C must keep their order. Swapping just those two makes a mirror, not a new view.

QUESTION 1

Level 2



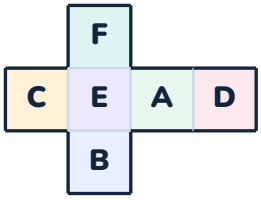


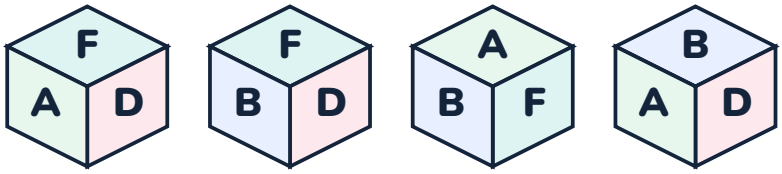
A B C D

Circle the cube this net could make.

QUESTION 2

Level 3





A B C D

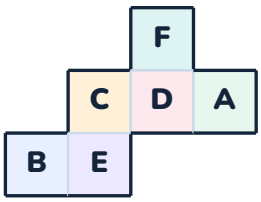
Circle the cube this net could make.

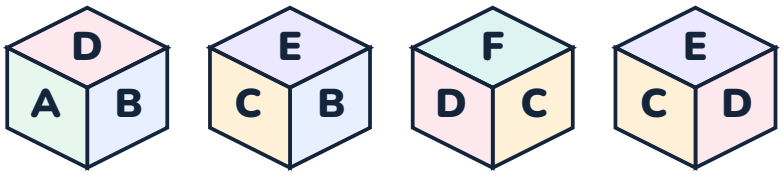
06 / INDEPENDENT PRACTICE

Solve, then name your check.

Circle one cube in each row. Start by ruling out opposite faces. For the remaining options, check the order of the three faces around the corner.

QUESTION 3 Level 4

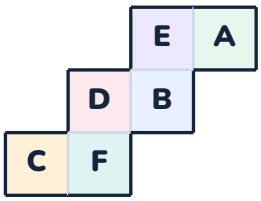


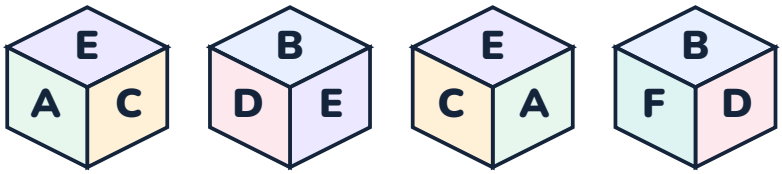


A B C D

Circle the cube this net could make.

QUESTION 4 Level 5

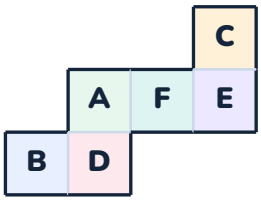


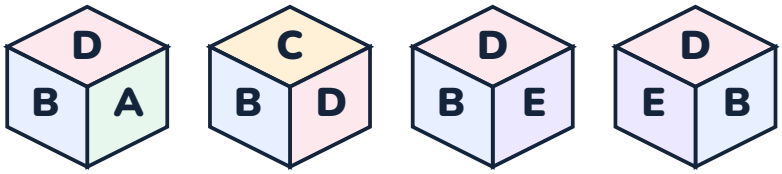


A B C D

Circle the cube this net could make.

QUESTION 5 Level 5





A B C D

Circle the cube this net could make.

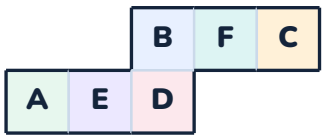
07 / STRETCH PRACTICE

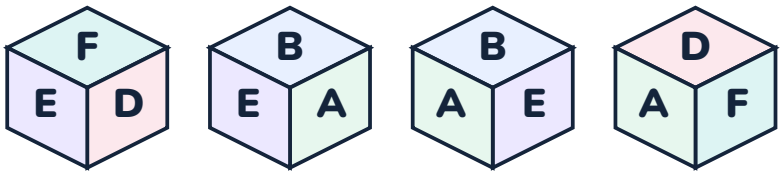
Ready for the trickier views?

At this stage, the tempting answer often uses three neighbouring faces in a mirrored order. You may rotate the whole cube, but you cannot flip it through a mirror.

QUESTION 6

Level 6



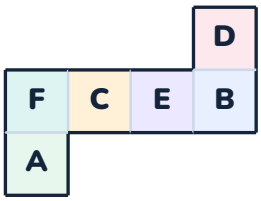


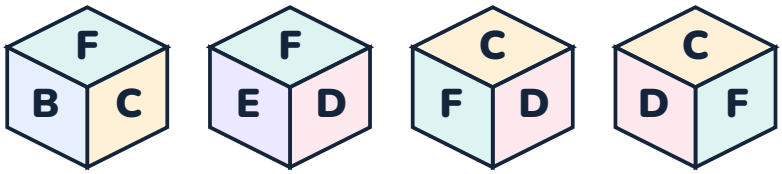
A B C D

Circle the cube this net could make.

QUESTION 7

Level 7



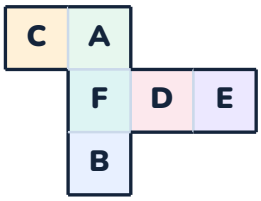


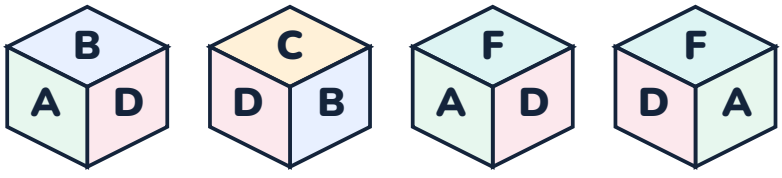
A B C D

Circle the cube this net could make.

QUESTION 8

Level 8





A B C D

Circle the cube this net could make.

08 / WORKED ANSWERS

The checks behind the letters.

Mark the method, not only the answer. When one is wrong, ask which check would have ruled out the tempting choice.

PAGE 2: THE PREDICTION

With B at the front and E on top, C is on the right. Folding keeps the order of the faces around that corner.

PAGE 3: YOUR PAPER CUBE

The opposite pairs are A / C, B / D and E / F. Turn the model over to check each pair.

PAGE 4: WHICH NETS FOLD?

A, C and E fold. B is a 2 x 3 block, D is a six-square strip and F has a joined pair that forces an overlap. A visual tip: track the face each square would become. A valid net uses every side once.

PAGE 5: OPPOSITE FACES

A -> C, B -> D, E -> F. If E is on top, F is below. A and C cannot appear together in a visible corner.

PAGES 6-7: QUESTIONS 1-4

Q1 **Answer B**

Opposites F/B, A/C, D/E. A: mirror order; C: opposite A/C; D: opposite D/E.

Q2 **Answer A**

Opposites C/A, F/B, E/D. B: opposite F/B; C: opposite F/B; D: mirror order.

Q3 **Answer B**

Opposites B/D, C/A, E/F. A: opposite B/D; C: mirror order; D: mirror order.

Q4 **Answer A**

Opposites C/B, D/A, F/E. B: mirror order; C: mirror order; D: mirror order.

09 / REVIEW AND GROW

Now turn a mistake into a plan.

A wrong answer is useful information. Match it to a check and try one more fresh cube-net question before moving on.

PAGES 7-8: QUESTIONS 5-8

Q5 **Answer C**

Opposites B/F, A/E, D/C. A: mirror order; B: opposite D/C; D: mirror order.

Q6 **Answer C**

Opposites A/D, E/F, B/C. A: opposite E/F; B: mirror order; D: opposite A/D.

Q7 **Answer D**

Opposites F/E, A/D, C/B. A: opposite C/B; B: opposite F/E; C: mirror order.

Q8 **Answer D**

Opposites C/D, A/B, F/E. A: opposite A/B; B: opposite C/D; C: mirror order.

IF THEY MISSED...

A dud net	-> Try the paper cut-out again.
Opposite faces	-> Find three pairs before looking at options.
A mirror view	-> Fix the top face; trace the other two.

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