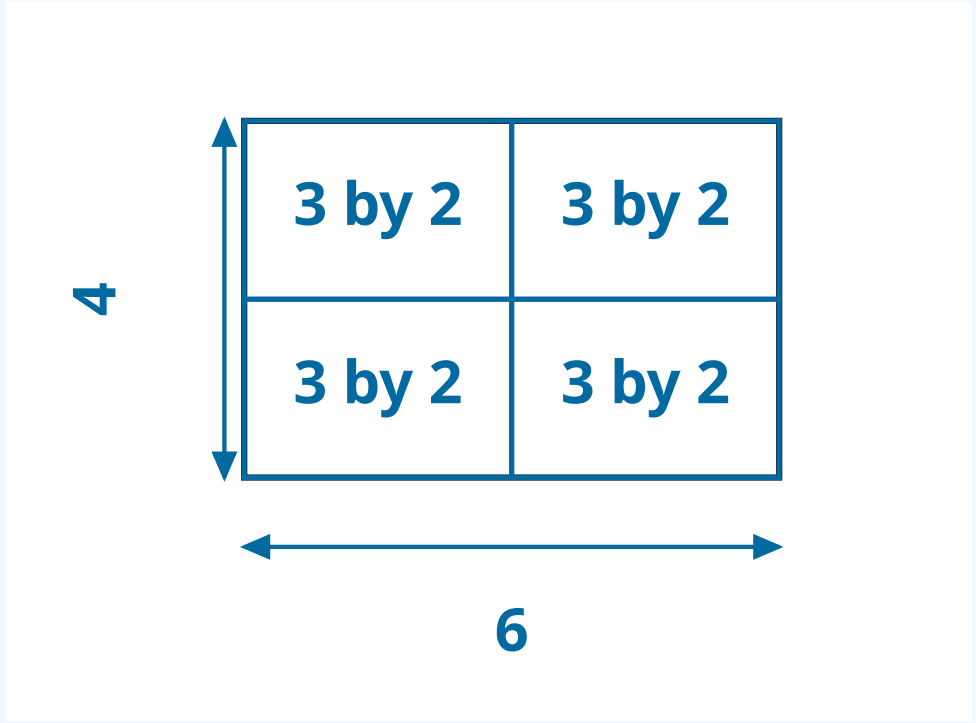
Mathematics 10-3

Unit G: Geometry and trigonometry

Packing puzzles and sliding tiles

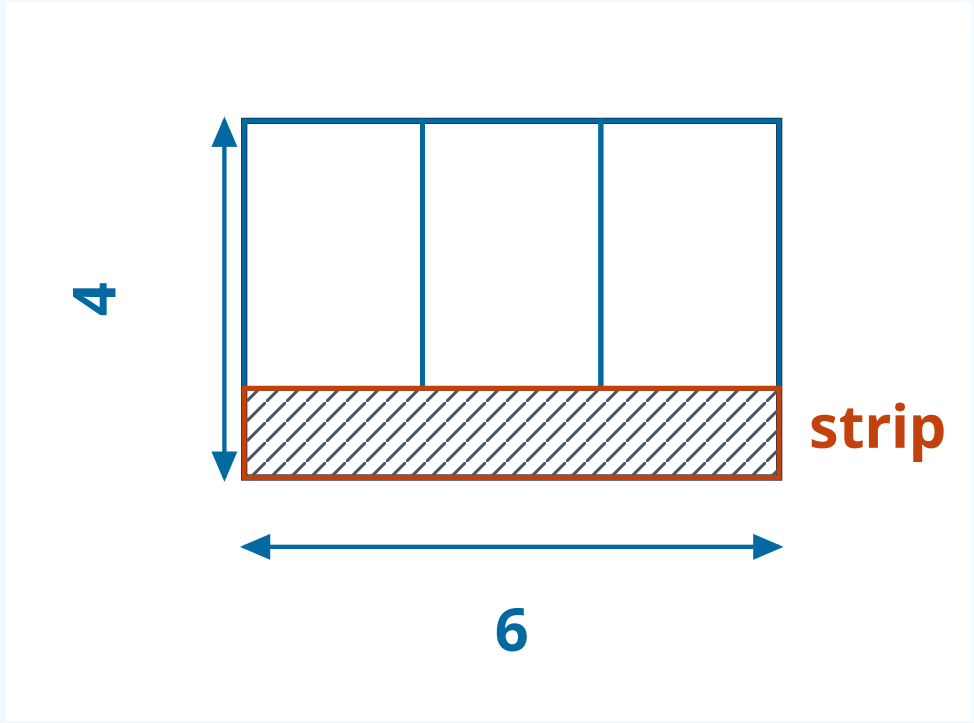
Four panels in a crate

- A 6 by 4 crate has to hold panels that are 3 by 2.
- Two panels fit along the 6, and two fit along the 4.
- That layout uses 4 panels and covers the crate.
- Turn every panel and the 4 side is no longer a whole number of panel edges.



Ways to work a packing puzzle

- Guess and check means you try one layout, then write what happened.
- A systematic list keeps every try.
- A drawing or a model shows the crate.
- Eliminating a try drops a layout that leaves a gap.
- Simplify means you solve a smaller crate first.
- Work backward means you start from a full crate and undo one panel.



Key terms

systematic list

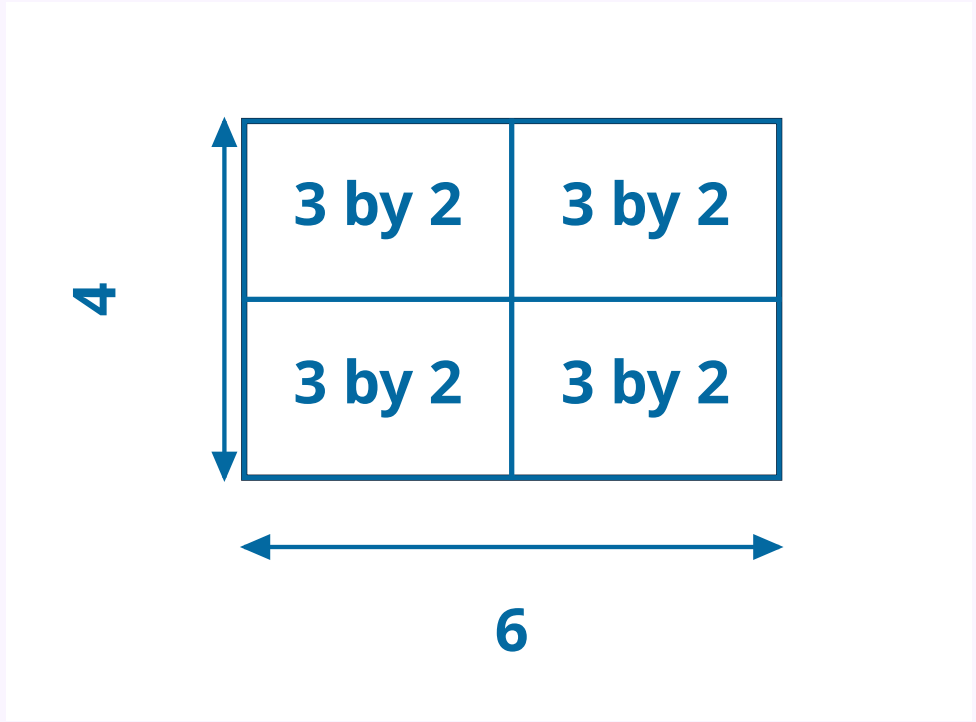
A written record of every try, kept in order, so the next try is a new move.

gap

The empty square in a sliding-tile tray. Tiles move by sliding into that empty square.

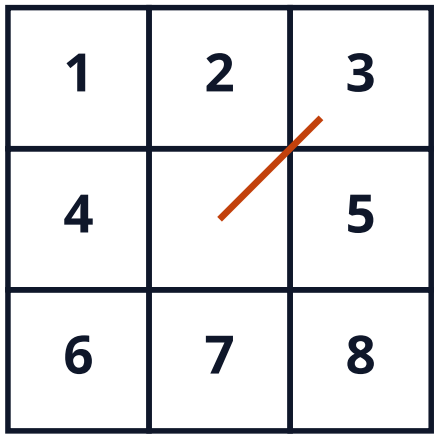
Area count and edge fit

- The crate area is 6 times 4, which is 24.
- Each panel is 3 times 2, which is 6.
- That 24 divided by 6 is 4 panels.
- Along 6 and 4, the panels sit as 3 plus 3 and 2 plus 2.
- That uses the 4 panels and the edges match.
- Turned panels ask 4 divided by 3.
- That split leaves a strip, so this orientation stays off the truck.



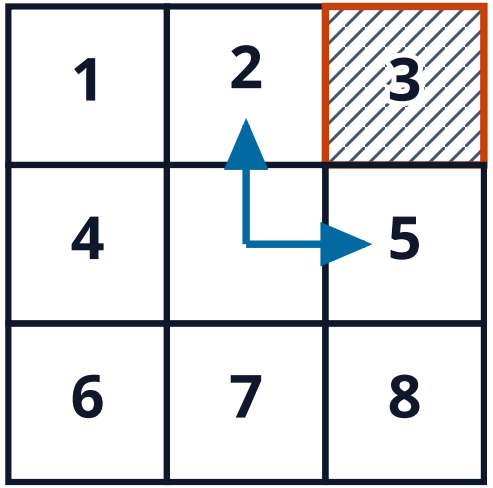
A lane of sliding tiles

- A 3 by 3 tray holds eight numbered tiles and one gap.
- A tile moves by sliding into the gap.
- The gap moves one square up, down, left, or right.
- A diagonal jump skips a square, so the tile would teleport.
- Finish the top row first, then treat the leftover 2 by 3 block as a smaller puzzle.



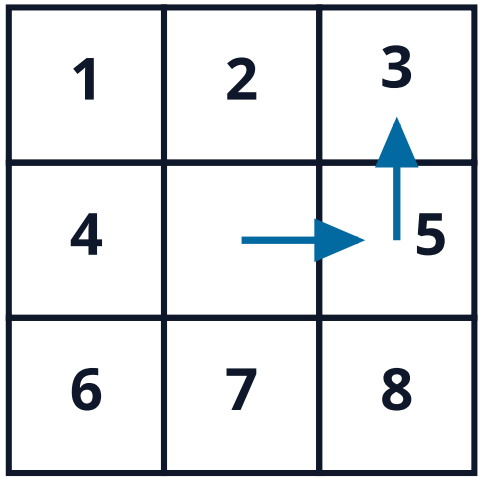
Block a corner and try again

- Cover the top-right square so no tile can land there.
- The goal is still a finished top row of the open squares.
- Work backward from that finished row: the gap has to sit just under the row before the last slide.
- Write the new rule in one sentence so a partner can try your variation.



Correct the written solution

- A classmate's list says the gap moved from the middle square straight to a corner.
- The middle square touches the corner only at a point.
- The gap's next square has to share a full side.
- The fix is two slides: one to the side, then one up or down into the corner.



side, then up

Crate and tray check

- Tell how many 3 by 2 panels cover a 6 by 4 crate, and which way they face.
- Name the error in a list that slides the gap diagonally, and give the two-slide fix.

