

Why three 16-inch rips do not fit

A 48-inch sheet divided by three looks like three 16-inch strips until the saw blade removes material. Use this worksheet to separate finished dimensions from kerf and edge trim before the first cut.

NAME _____

DATE _____

CLASS / SHOP _____

THE FORMULA

$$\text{equal width} = [\text{usable width} - \text{edge trim} - ((\text{strip count} - 1) \times \text{kerf})] / \text{strip count}$$

Use strip count - 1 because the two outside sheet edges are boundaries. Deliberate cleanup cuts belong in edge trim.

Worked example

Inputs 48 in usable width 3 strips 1/8 in kerf 0 edge trim	Blade paths 3 - 1 = 2 internal kerfs 2 x 0.125 = 0.25 in removed	Maximum (48 - 0.25) / 3 15.91667 in 15 29/32 in conservative
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48-inch reference at 1/8-inch kerf

STRIPS	EXACT MAXIMUM	CONSERVATIVE SHOP FRACTION	INTERNAL KERFS
2	23.93750 in	23 15/16 in	1
3	15.91667 in	15 29/32 in	2
4	11.90625 in	11 29/32 in	3
5	9.50000 in	9 1/2 in	4
6	7.89583 in	7 57/64 in	5
7	6.75000 in	6 3/4 in	6
8	5.89063 in	5 57/64 in	7

Try it

1. A sheet measures 47 15/16 in wide. What is the maximum for four equal strips with a 3/32 in kerf and no edge trim?

2. A 48 in sheet needs 1/8 in removed from each outside edge. Find four equal strips with a 1/8 in kerf.

3. Can three finished 15 7/8 in strips fit with a 1/8 in kerf and no trim? Show the total width consumed.

Answer key and shop discussion

The mathematical answer is only the start. Students should identify what was measured, what the blade removes, what the calculation cannot know, and how they will verify the first cut safely.

1. $(47.9375 - (3 \times 0.09375)) / 4 = 11.9140625$ in. Rounded down to 1/64 in: 11 29/32 in.

2. Total edge trim is 0.25 in. $(48 - 0.25 - (3 \times 0.125)) / 4 = 11.84375$ in = 11 27/32 in.

3. Yes. Finished strips use 47.625 in. Two internal kerfs use 0.25 in. Total consumed is 47.875 in, leaving 0.125 in before any unplanned loss.

Four checks before cutting

CHECK	STUDENT SHOULD STATE
Measure	The usable sheet width, not only the nominal label.
Separate	Finished strip dimensions, total edge trim, and blade kerf are different inputs.
Count	There are $n - 1$ internal kerfs when the outside edges are retained as boundaries.
Verify	Measure the first strip and confirm the planned support and safe cut sequence.

Extension prompts

1. Why is dividing by strip count before subtracting kerf incorrect?
2. When would n kerfs be the correct model instead of $n - 1$?
3. How would a damaged outside edge change the formula?
4. Which uncertainty matters more in your shop: sheet variation, fence setup, blade runout, or handling?

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Interactive guide, full four-kerf chart, and CSV source data: sawnest.com/guides/plywood-equal-rip-width-chart

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