

Measuring Length

Lengths are measured in customary units (inches, feet, yards) or metric units (centimeters, meters). Picking the right unit depends on the size of what you are measuring.


| Customary | Metric |
|-----------------------------|----------------------------|
| 1 foot = 12 inches | 1 meter = 100 centimeters |
| 1 yard = 3 feet = 36 inches | 1 kilometer = 1,000 meters |

Key Concepts

- 1. Customary** units of length: inch, foot, yard, mile. **Metric** units: centimeter, meter, kilometer. The two systems are completely separate — don't mix them.
- 2. Conversions:** 12 in = 1 ft; 3 ft = 1 yd; 100 cm = 1 m. To go from a bigger unit to a smaller one, multiply. From smaller to bigger, divide.
- 3. Pick a unit that matches the size:** inches for short things (a pencil), feet for room-sized things, yards or meters for fields, miles or kilometers for trips.
- 4. To compare lengths in different units,** first convert both to the same unit.


Worked Examples

① Convert 4 feet to inches.

 Going from a bigger unit (feet) to a smaller one (inches), so multiply. One foot has 12 inches, so four feet has $4 \times 12 = 48$ inches.


 **Answer:** 48 inches

② Which unit is best to measure the length of a classroom: inches, feet, or yards?

 Inches are way too small (a typical classroom is hundreds of inches), and yards are reasonable but feet are most common in the U.S. for room-size measurements. *Feet* is the best fit.

 **Answer:** Feet

③ A ribbon is 2 meters long. How many centimeters is that?

 Going from meters (bigger) to centimeters (smaller), so multiply. 1 meter = 100 centimeters, so 2 meters = $2 \times 100 = 200$ centimeters.

 **Answer:** 200 cm

Practice Problems

Convert or choose the best unit.

1. 3 ft = ? in _____

4. 36 in = ? ft _____

2. 2 yd = ? ft _____




5. 9 ft = ? yd _____

3. 5 m = ? cm _____

6. 400 cm = ? m _____

7. Best unit for a book: in, ft, yd? _____
8. Best unit for a football field? _____
9. $6 \text{ ft} = ? \text{ in}$ _____
10. $1 \text{ yd} = ? \text{ in}$ _____
11. $7 \text{ m} = ? \text{ cm}$ _____
12. $24 \text{ in} = ? \text{ ft}$ _____
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Study Tips

-  To convert a bigger unit into a smaller one, multiply. To go the other way, divide.
-  Memorize the three key conversions: $12 \text{ in} = 1 \text{ ft}$, $3 \text{ ft} = 1 \text{ yd}$, $100 \text{ cm} = 1 \text{ m}$. The rest of measurement gets easier.
-  Imagine the object before you pick a unit. Could you measure a pencil in yards? Sure, but the numbers would be tiny — inches are friendlier.

Word Problems

1. A table is 5 feet long. A shelf is 48 inches long. Which one is longer?

Answer: _____

2. Maria's ribbon is 3 meters long. She cuts off 150 centimeters. How many centimeters of ribbon are left?

Answer: _____

Answer Key — with Friendly Explanations**Practice Problems**

1. $3 \times 12 = 36$ inches.

 **Answer:** 36 *in*

2. $2 \times 3 = 6$ feet.

 **Answer:** 6 *ft*

3. $5 \times 100 = 500$ cm.

 **Answer:** 500 *cm*

4. $36 \div 12 = 3$ feet.

 **Answer:** 3 *ft*

5. $9 \div 3 = 3$ yards.

 **Answer:** 3 *yd*

6. $400 \div 100 = 4$ meters.

 **Answer:** 4 *m*

7. A book is small — inches fit best.

 **Answer:** *Inches*

8. A football field is long — yards (or meters) fit best.

 **Answer:** *Yards*

9. $6 \times 12 = 72$ inches.

 **Answer:** 72 *in*

10. $1 \text{ yd} = 36 \text{ in}$ (since $1 \times 3 \times 12 = 36$).

 **Answer:** 36 *in*

11. $7 \times 100 = 700$ cm.

 **Answer:** 700 *cm*

12. $24 \div 12 = 2$ feet.

 **Answer:** 2 *ft***Word Problems**

1. $5 \text{ ft} = 60 \text{ in} > 48 \text{ in}$.

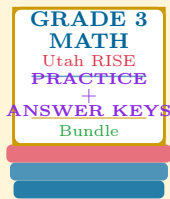
 **Answer:** *Table is longer*

2. $3 \text{ m} = 300 \text{ cm}$; $300 - 150 = 150$.

 **Answer:** 150 *cm left*

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