

Chapter 12 Wood as a Building Material

Reading Lumber Sizes

INTRODUCTION The width and thickness of lumber are given by two types of dimensions: nominal and actual. The *nominal dimension*, such as 2" × 4", is the size of the board, in inches, as originally cut. Nominal dimensions, or nominal sizes, refer to rough-sawn lumber.

NCTM STANDARDS

- Geometry
- Measurement
- Number & Operations
- Problem Solving

After the board has been surfaced and seasoned at the mill, it has an *actual dimension*, or actual size. This dimension is less than its nominal dimension.

Hint: The "2" and "4" in a 2×4 represent the thickness (2) and width (4) of the board, in inches. Each standard size of lumber also comes in a variety of standard lengths. Generally, lumber for building construction is cut in *even* lengths ranging from 8' to 22'. This length is given as a third number (for example, 2 × 4 × 16'), although note that the length is always measured in feet while the thickness and width are measured in inches.

Problem Exercises

Directions Use the table of nominal and actual lumber sizes below to answer the following questions.

Nominal/Actual Lumber Sizes			
Nominal Size	Actual Size	Nominal Size	Actual Size
1×2	3/4" × 1 1/2"	2×3	1 1/2" × 2 1/2"
1×3	3/4" × 2 1/2"	2×4	1 1/2" × 3 1/2"
1×4	3/4" × 3 1/2"	2×6	1 1/2" × 5 1/2"
1×6	3/4" × 5 1/2"	2×8	1 1/2" × 7 1/2"
1×8	3/4" × 7 1/2"	2×10	1 1/2" × 9 1/2"
1×10	3/4" × 9 1/2"	2×12	1 1/2" × 11 1/2"
1×12	3/4" × 11 1/2"		

1. What is the actual thickness of all 2×s? _____
2. What is the actual thickness of all 1×s? _____
3. What is the actual thickness of two 2×s? _____
4. What is the actual thickness of two 1×s? _____
5. If the actual size is 1 1/2" × 5 1/2", what is the nominal size? _____
6. What is the actual width of a 1×10? _____
7. What is the actual width of a 2 × 4 and a 2 × 8? _____

continued



Mathematics Application 12-1 (continued)

Directions Read the following lumber order: fifteen $2 \times 6 \times 20'$. Answer the following questions.

8. What is the nominal thickness of the lumber? _____
9. What is the actual width of the lumber? _____
10. What is the length of the lumber? _____
11. How many pieces are there? _____

Directions Answer the following questions when construction prints call for a $10''$ wide girder that is $20'$ long.

12. How thick will it be if you use four 2×10 s? _____
13. How thick will it be if you use five 2×10 s? _____
14. How thick will it be if you use eight 1×10 s? _____
15. A $13'$ interior wall calls for one 2×4 toe plate and two 2×4 top plates. Write the lumber order. _____
16. A gable roof calls for fourteen 2×8 rafters on each side of the gable. Each rafter needs to be $14'-6\frac{1}{2}''$ long. Write the lumber order. _____
17. A blueprint calls for double 2×10 door headers. What is the actual thickness of the double headers? _____
18. If 2×4 studs are laid $16''$ OC, what is the actual distance between 2 studs? _____
19. If 2×8 rafters are laid $24''$ OC, what is the actual distance between 2 rafters? _____
20. If 2×6 floor joists are laid $12''$ OC, what is the actual distance between 2 joists? _____