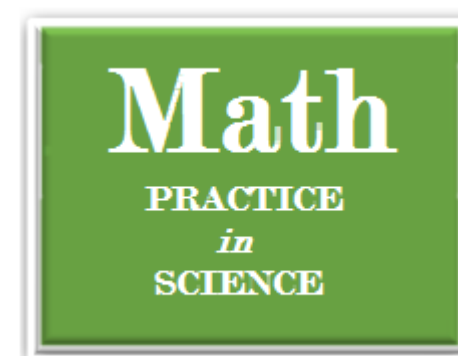# 064 Math Practice
Proportions Using Cross Products

Suppose you are trying to find the missing number in a proportion. You can use the cross product method. When you use this method, you multiply the top of one ratio times the bottom of the other ratio. Then you multiply the bottom half of the first ratio times the top half of the second ratio.

Example:

$$\frac{10}{N} = \frac{15}{30}$$

$$15 \times N = 10 \times 30$$

Step 1: Multiply on the diagonals.

$$\frac{N}{12} = \frac{20}{24}$$

$$12 \times 20 = N \times 24$$

$$15 \times N = 300$$

Step 2: Simplify. In this case, you want to isolate the N from all other numbers. Since the problems call for you to multiply something times N, use the opposite operation—that is, division.

$$240 = N \times 24$$

$$\frac{15 \times N}{15} = \frac{300}{15}$$

$$\frac{\cancel{15}^{1} \times N}{\cancel{15}} = \frac{300}{15}$$

$$N = \frac{300}{15} = 20$$

$$\frac{10}{20} = \frac{15}{30}$$

Step 3: Complete with a final division.

$$\frac{240}{24} = \frac{N \times 24}{24}$$

$$\frac{240}{24} = \frac{N \times \cancel{24}^{1}}{\cancel{24}}$$

$$\frac{240}{24} = N$$

$$10 = N$$

Use the cross product method to solve for the missing number.
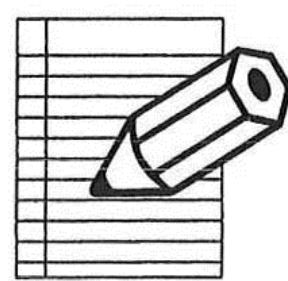
1. $\dfrac{3}{4} = \dfrac{N}{8}$

   N = _____

2. $\dfrac{5}{8} = \dfrac{6}{N}$

   N = _____

3. $\dfrac{4}{N} = \dfrac{1}{30}$

   N = _____

4. $\dfrac{5}{12} = \dfrac{4}{N}$

   N = _____

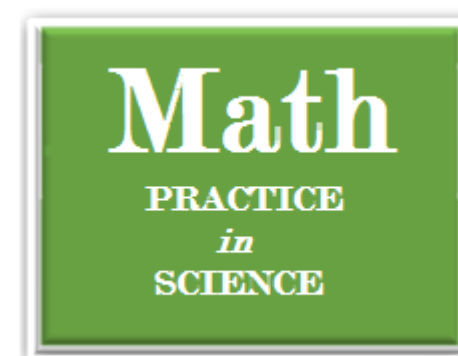5. $\dfrac{4}{N} = \dfrac{12}{15}$

   N = _____

6. $\dfrac{5}{N} = \dfrac{6}{15}$

   N = _____

It is 230 miles from Rochester to Duluth. If Barbara drives an average of 50 miles per hour, how long will it take her to make the trip?

_____

065 Math Practice
Using the Cross Product

Use the cross product method to solve for the missing number.

1. $\dfrac{N}{6} = \dfrac{6}{9}$

   N = _____

2. $\dfrac{8}{12} = \dfrac{6}{N}$

   N = _____

3. $\dfrac{3}{8} = \dfrac{N}{32}$

   N = _____

4. $\dfrac{4}{N} = \dfrac{6}{15}$

   N = _____

5. $\dfrac{1}{3} = \dfrac{N}{6}$

   N = _____

6. $\dfrac{8}{25} = \dfrac{N}{10}$

   N = _____

7. $\dfrac{4}{12} = \dfrac{15}{N}$

   N = _____

8. $\dfrac{12}{N} = \dfrac{4}{9}$

   N = _____

9. $\dfrac{8}{3} = \dfrac{12}{N}$

   N = _____

10. $\dfrac{6}{10} = \dfrac{N}{8}$

    N = _____

11. $\dfrac{12}{8} = \dfrac{N}{5}$

    N = _____

12. $\dfrac{5}{8} = \dfrac{N}{12}$

    N = _____

13. $\dfrac{4}{5} = \dfrac{N}{60}$

    N = _____

14. $\dfrac{10}{13} = \dfrac{150}{N}$

    N = _____

15. $\dfrac{13}{N} = \dfrac{52}{20}$

    N = _____

16. $\dfrac{13}{15} = \dfrac{N}{45}$
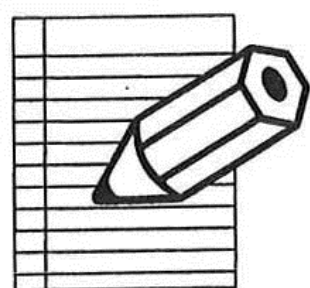
    N = _____

17. $\dfrac{10}{24} = \dfrac{50}{N}$

    N = _____

18. $\dfrac{23}{N} = \dfrac{92}{28}$

    N = _____

19. $\dfrac{5}{N} = \dfrac{6}{15}$

    N = _____

20. $\dfrac{6}{15} = \dfrac{10}{N}$

    N = _____

21. $\dfrac{3}{5} = \dfrac{N}{15}$

    N = _____

There are 20 cars in the parking lot. If 2 out of 5 cars are two-door models, how many two-door cars are in the lot?

_____