INTRO TO MULTIPLYING FRACTIONS

EXAMPLE #1 - RELATING MULTIPLICATION TO DIVISION

$$9 \div 3 = 3$$

$\dfrac{1}{3}$ X 9   MEANS $\dfrac{1}{3}$ OF 9   OR   ① ② ③ ① ② ③ ① ② ③

> YOU ARE CUTTING THE 9 INTO THREE EQUAL PIECES. IN OTHER WORDS, YOU'RE DIVIDING 9 BY 3, WHICH EQUALS 3.

NOW YOUR TURN. DIVIDE THE WHOLE NUMBER BY THE DENOMINATOR.

1. $\dfrac{1}{4}$ X 8 = 2

   $8 \div 4 = 2$

2. $\dfrac{1}{6}$ X 24 = 4

3. $\dfrac{1}{2}$ X 14 = 7

4. $\dfrac{1}{5}$ X 25 = 5

5. $\dfrac{1}{3}$ X 27 = 9

6. $\dfrac{1}{8}$ X 48 = 6

EXAMPLE #2 - DRAWING

$\dfrac{1}{3}$ X $\dfrac{1}{2}$ MEANS $\dfrac{1}{3}$ OF $\dfrac{1}{2}$

[1] ← 1 RECTANGLE

[$\frac{1}{2}$] ← $\dfrac{1}{2}$

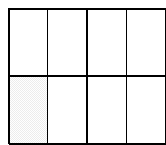[$\frac{1}{3}$] ← $\dfrac{1}{3}$ OF $\dfrac{1}{2}$ = $\dfrac{1}{6}$
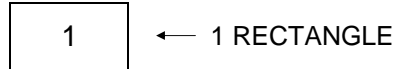
> WE CAN USE A FIGURE TO BETTER UNDERSTAND THIS PROBLEM. WE HAVE $\frac{1}{2}$ OF THE WHOLE RECTANGLE AND WE'RE GOING TO TAKE $\frac{1}{3}$ OF THAT, WHICH GIVES US $\frac{1}{6}$ OF THE WHOLE FIGURE.
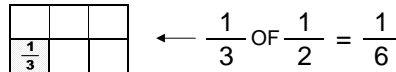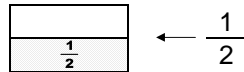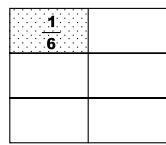
NOW YOUR TURN. USE THE RECTANGLES TO HELP SOLVE THE PROBLEMS BELOW.

7. $\dfrac{1}{2}$ X $\dfrac{1}{4}$ = $\dfrac{1}{8}$

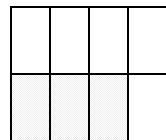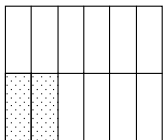8. $\dfrac{1}{2}$ X $\dfrac{1}{3}$ = $\dfrac{1}{6}$

> 1. SEPARATE THE RECTANGLE INTO 4 PARTS ($\frac{1}{4}$).
> 2. SHADE IN $\frac{1}{2}$ OF ONE OF THE FOUR PIECES.
> 3. CUT THE OTHER THREE PARTS INTO HALVES TO MAKE THE PIECES ALL THE SAME SIZE.
> 4. THIS SHOWS YOU HAVE ONE OUT OF EIGHT PIECES OR $\frac{1}{8}$.

> ON THIS PROBLEM YOU NEED TO TAKE $\frac{1}{2}$ OF THE $\frac{1}{3}$. DON'T' FORGET, ALL THE PIECES HAVE TO BE THE SAME SIZE.

9. $\dfrac{2}{3}$ X $\dfrac{1}{4}$ = $\dfrac{2}{12}$ = $\dfrac{1}{6}$

10. $\dfrac{3}{4}$ X $\dfrac{1}{2}$ = $\dfrac{3}{8}$

MULTIPLYING FRACTIONS - PRACTICE

> THERE'S AN EASY WAY TO MULTIPLY FRACTIONS. MULTIPLY THE NUMERATORS (TOP NUMBERS) AND MULTIPLY THE DENOMINATORS (BOTTOM NUMBERS).

EXAMPLE #3 - MULTIPLYING STRAIGHT ACROSS

A. $\dfrac{1}{3}$ X $\dfrac{1}{2}$ = $\dfrac{1}{3}$ X $\dfrac{1}{2}$ = $\dfrac{1}{6}$

> A SIMPLE WAY TO MULTIPLY FRACTIONS IS TO MULTIPLY STRAIGHT ACROSS. MULTIPLY THE TWO NUMERATORS AND DENOMINATORS.

B. $\dfrac{3}{4}$ X 8 = $\dfrac{3}{4}$ X $\dfrac{8}{1}$ = $\dfrac{24}{4}$

> BEFORE MULTIPLYING STRAIGHT ACROSS YOU NEED TO CHANGE THE 8 INTO A FRACTION. DO YOU SEE HOW WE PUT THE 8 OVER 1? $8 = \frac{8}{1}$.

> ON THIS PROBLEM, YOU END UP WITH AN IMPROPER FRACTION. YOU'LL NEED TO SIMPLIFY.

$$\dfrac{24}{4} \div \dfrac{4}{4} = \dfrac{6}{1} = 6$$

NOW YOUR TURN. MULTIPLY STRAIGHT ACROSS TO SOLVE THESE PROBLEMS.
DON'T FORGET TO SIMPLIFY.

1. $\dfrac{1}{2}$ X $\dfrac{1}{4}$ = $\dfrac{1}{8}$

2. $\dfrac{2}{7}$ X $\dfrac{1}{2}$ = $\dfrac{1}{7}$

3. $\dfrac{1}{3}$ X $\dfrac{2}{3}$ = $\dfrac{2}{9}$

4. $\dfrac{3}{4}$ X $\dfrac{1}{5}$ = $\dfrac{3}{20}$

5. 6 X $\dfrac{4}{5}$ = $4\dfrac{4}{5}$

6. $\dfrac{2}{5}$ X $\dfrac{5}{6}$ = $\dfrac{1}{3}$

7. $\dfrac{6}{7}$ X $\dfrac{2}{3}$ = $\dfrac{4}{7}$

8. $\dfrac{5}{8}$ X $\dfrac{2}{9}$ = $\dfrac{5}{36}$

9. $\dfrac{1}{2}$ X $\dfrac{7}{12}$ = $\dfrac{7}{24}$

10. $\dfrac{8}{9}$ X $\dfrac{1}{2}$ = $\dfrac{4}{9}$

11. $\dfrac{4}{7}$ X $\dfrac{3}{7}$ = $\dfrac{12}{49}$

12. $\dfrac{2}{3}$ X 9 = 6

13. $\dfrac{4}{11}$ X $\dfrac{2}{6}$ = $\dfrac{4}{33}$

14. 12 X $\dfrac{3}{10}$ = $3\dfrac{3}{5}$

15. $\dfrac{5}{6}$ X $\dfrac{8}{15}$ = $\dfrac{4}{9}$

16. 20 X $\dfrac{3}{8}$ = $7\dfrac{1}{2}$

17. $\dfrac{6}{7}$ X $\dfrac{1}{2}$ = $\dfrac{3}{7}$

18. $\dfrac{1}{4}$ X 8 = 2