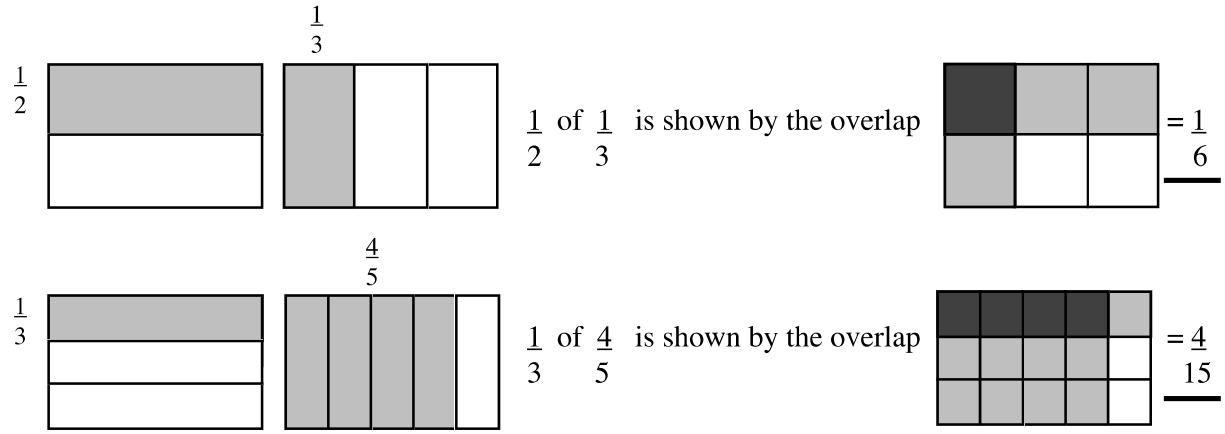
Multiplications and Division of Fractions 2.

A). The diagrams show how to multiply a fraction by another fraction.



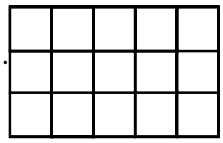
$\frac{1}{2}$ of $\frac{1}{3}$ is shown by the overlap $= \frac{1}{6}$

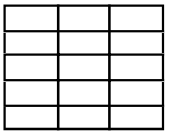
$\frac{1}{3}$ of $\frac{4}{5}$ is shown by the overlap $= \frac{4}{15}$

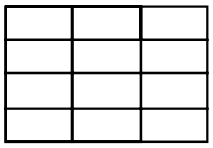
You can do fraction multiplication by folding paper! Try it.

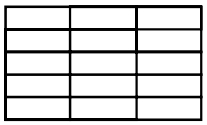
Copy each diagram, and by shading solve the following.

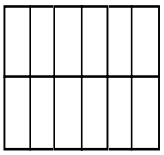
1).  $\frac{1}{2} \times \frac{3}{4}$

2).  $\frac{1}{3} \times \frac{2}{5}$

3).  $\frac{1}{5} \times \frac{2}{3}$

4).  $\frac{1}{4} \times \frac{1}{3}$

5).  $\frac{4}{5} \times \frac{2}{3}$

6).  $\frac{1}{2} \times \frac{5}{6}$

7). Look at the questions and answers. Write a rule about how to multiply fractions.

Use your rule to answer the following.

8). $\frac{1}{5} \times \frac{2}{5}$ 9). $\frac{1}{2} \times \frac{3}{7}$ 10). $\frac{1}{4} \times \frac{3}{5}$ 11). $\frac{1}{2} \times \frac{5}{7}$ 12). $\frac{1}{3} \times \frac{4}{7}$

13). $\frac{1}{5} \times \frac{2}{9}$ 14). $\frac{1}{6} \times \frac{5}{8}$ 15). $\frac{1}{7} \times \frac{2}{5}$ 16). $\frac{1}{4} \times \frac{5}{6}$ 17). $\frac{1}{7} \times \frac{4}{5}$

18). $\frac{1}{4} \times \frac{7}{8}$ 19). $\frac{1}{8} \times \frac{3}{4}$ 20). $\frac{4}{9} \times \frac{2}{5}$ 21). $\frac{1}{10} \times \frac{7}{12}$ 22). $\frac{1}{5} \times \frac{4}{7}$

23). $\frac{1}{9} \times \frac{5}{6}$ 24). $\frac{1}{8} \times \frac{5}{6}$ 25). $\frac{1}{7} \times \frac{2}{3}$ 26). $\frac{1}{6} \times \frac{7}{12}$ 27). $\frac{1}{11} \times \frac{7}{12}$

28). $\frac{1}{7} \times \frac{9}{10}$ 29). $\frac{1}{6} \times \frac{11}{12}$ 30). $\frac{1}{4} \times \frac{7}{13}$ 31). $\frac{1}{9} \times \frac{5}{12}$ 32). $\frac{1}{12} \times \frac{9}{11}$

B). Now answer these using the same rule.

1). $\frac{2}{3} \times \frac{4}{5}$ 2). $\frac{2}{5} \times \frac{2}{3}$ 3). $\frac{4}{7} \times \frac{3}{5}$ 4). $\frac{5}{6} \times \frac{1}{4}$ 5). $\frac{3}{8} \times \frac{5}{7}$

6). $\frac{3}{4} \times \frac{7}{8}$ 7). $\frac{6}{11} \times \frac{4}{7}$ 8). $\frac{5}{9} \times \frac{2}{7}$ 9). $\frac{7}{12} \times \frac{5}{11}$ 10). $\frac{3}{4} \times \frac{8}{15}$

11). Why is question 10 different from the other questions ?

C). Some answers cancel down. The easiest way to do this is to cancel before multiplying.

E.g. $\frac{3}{{}_{2}\cancel{4}} \times \frac{\cancel{6}^{3}}{7} = \frac{3}{2} \times \frac{3}{7} = \frac{9}{14}$ Sometimes there is more to cancel.

E.g. $\frac{2}{{}_{1}\cancel{3}} \times \frac{\cancel{9}^{3}}{10} = \frac{{}^{1}\cancel{2}}{1} \times \frac{3}{\cancel{10}_{5}} = \frac{1}{1} \times \frac{3}{5} = \frac{3}{5}$

This is usually done as one calculation looking like this : $\frac{{}^{1}\cancel{2}}{{}_{1}\cancel{3}} \times \frac{\cancel{9}^{3}}{\cancel{10}_{5}} = \frac{3}{5}$

Work out the following, cancel down where appropriate.

1). $\frac{2}{3} \times \frac{6}{7}$ 2). $\frac{3}{4} \times \frac{8}{11}$ 3). $\frac{15}{17} \times \frac{4}{5}$ 4). $\frac{7}{10} \times \frac{19}{21}$ 5). $\frac{2}{3} \times \frac{15}{17}$

6). $\frac{1}{2} \times \frac{14}{15}$ 7). $\frac{11}{21} \times \frac{3}{4}$ 8). $\frac{2}{5} \times \frac{20}{21}$ 9). $\frac{7}{22} \times \frac{2}{3}$ 10). $\frac{4}{7} \times \frac{23}{28}$

11). $\frac{15}{28} \times \frac{4}{5}$ 12). $\frac{5}{6} \times \frac{3}{5}$ 13). $\frac{3}{4} \times \frac{16}{21}$ 14). $\frac{20}{33} \times \frac{3}{8}$ 15). $\frac{9}{14} \times \frac{2}{3}$

16). $\frac{9}{10} \times \frac{5}{6}$ 17). $\frac{3}{7} \times \frac{21}{27}$ 18). $\frac{3}{8} \times \frac{4}{15}$ 19). $\frac{4}{5} \times \frac{15}{32}$ 20). $\frac{4}{5} \times \frac{15}{24}$

21). $\frac{15}{28} \times \frac{7}{10}$ 22). $\frac{26}{35} \times \frac{10}{13}$ 23). $\frac{15}{26} \times \frac{39}{42}$ 24). $\frac{20}{21} \times \frac{14}{35}$ 25). $\frac{16}{21} \times \frac{35}{42}$

26). $\frac{6}{7} \times \frac{14}{9}$ 27). $\frac{35}{28} \times \frac{2}{5}$ 28). $\frac{2}{3} \times \frac{27}{14}$ 29). $\frac{72}{25} \times \frac{5}{8}$ 30). $\frac{9}{32} \times \frac{56}{33}$

These are harder, but see if you can work out how to calculate the answers.
Look at questions 26 to 30 for a clue!

31). $1\frac{1}{4} \times \frac{8}{9}$ 32). $\frac{2}{3} \times 2\frac{1}{4}$ 33). $2\frac{2}{9} \times \frac{3}{4}$ 34). $\frac{4}{5} \times 2\frac{11}{12}$ 35). $3\frac{1}{21} \times \frac{3}{8}$

36). $1\frac{1}{5} \times 3\frac{1}{4}$ 37). $1\frac{1}{4} \times 2\frac{2}{3}$ 38). $1\frac{1}{5} \times 3\frac{3}{4}$ 39). $3\frac{2}{7} \times 2\frac{5}{8}$ 40). $3\frac{1}{9} \times 2\frac{1}{7}$