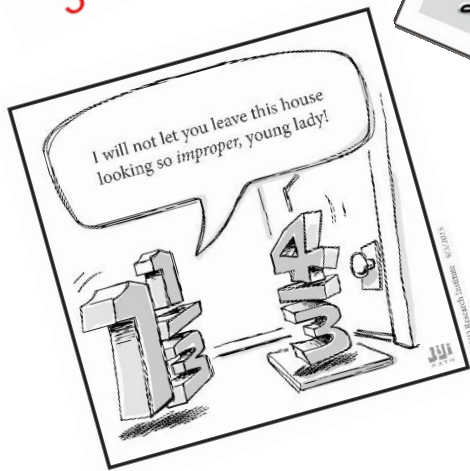
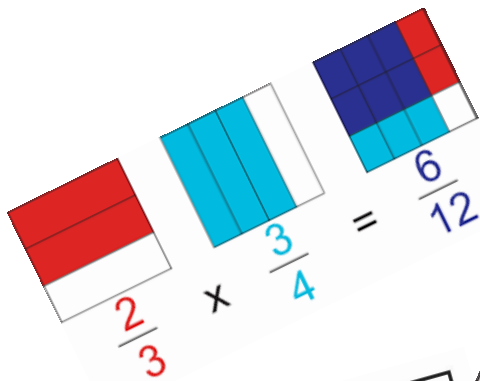


Year 8 - MYP 2

Multiplying / Dividing fractions

Square roots of fractions

Problem – Solving



2019-2020

Multiplying Fractions

To multiply two fractions, we multiply the two numerators to get the new numerator and multiply the two denominators to get the new denominator.

$$\frac{a}{b} \times \frac{c}{d} = \frac{a \times c}{b \times d}$$

Don't forget to turn the mixed numbers into improper fractions before you proceed with the operations.

$$\frac{p}{a} \times \frac{q}{c} = \frac{p \times q}{a \times c}$$

To help make multiplication easier, we can cancel any common factors in the numerator and denominator before we multiply.

Example

Find: **a** $\frac{4}{9} \times \frac{3}{5}$

b $\frac{4}{9} \times 1\frac{7}{8}$

$$\begin{aligned} \mathbf{a} \quad & \frac{4}{9} \times \frac{3}{5} \\ & = \frac{4}{\cancel{9}^3} \times \frac{\cancel{3}^1}{5} \\ & = \frac{4}{15} \end{aligned}$$

$$\begin{aligned} \mathbf{b} \quad & \frac{4}{9} \times 1\frac{7}{8} \\ & = \frac{\cancel{4}^1}{\cancel{9}^3} \times \frac{\cancel{15}^5}{\cancel{8}^2} \\ & = \frac{5}{6} \end{aligned}$$

1. Multiply the fractions.

a) $\frac{3}{7} \times \frac{2}{11}$

b) $\frac{3}{5} \times \frac{15}{12}$

c) $\frac{6}{13} \times \frac{2}{5}$

d) $\frac{12}{36} \times \frac{4}{8}$

e) $\frac{15}{8} \times \frac{24}{45}$

f) $2\frac{3}{7} \times 4\frac{2}{3}$

g) $4\frac{1}{4} \times \frac{4}{8}$

h) $-\frac{3}{5} \times \frac{2}{6}$

i) $-\frac{4}{5} \times (-\frac{2}{3})$

j) $-2\frac{3}{5} \times (-4\frac{1}{6})$

k) $-2\frac{1}{5} \times (-1\frac{2}{7}) \times \frac{14}{4}$

l) $\frac{1}{5} \times (-2\frac{2}{3}) \times (-\frac{3}{4})$

m) $\frac{3}{4}$ of 64

n) $\frac{5}{8}$ of 640

2. Find:

a. $\frac{3}{4} \times \frac{2}{5} + \frac{5}{8} \times (-\frac{2}{5})$

c. $\frac{1}{2} \times \frac{2}{5} \times (-\frac{1}{5} - \frac{3}{10})$

b. $(\frac{2}{5} - \frac{15}{12}) \times \frac{3}{2}$

d. $-\frac{12}{36} \times 2\frac{4}{8} - 3\frac{1}{4}$

Dividing Fractions

To divide two fractions, we multiply the first fraction by the reciprocal of the second.

$$\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \times \frac{d}{c} = \frac{a \times d}{b \times c}$$

the reciprocal of $\frac{a}{b}$ is $\frac{b}{a}$

Two numbers are reciprocals of each other if their product is one.

For example: $5 \times \frac{1}{5} = 1$

3. Divide the fractions.

a) $\frac{3}{7} \div \frac{2}{11}$

b) $\frac{3}{5} \div \frac{2}{12}$

c) $\frac{6}{7} \div \frac{2}{5}$

d) $\frac{12}{24} \div \frac{4}{8}$

e) $\frac{5}{8} \div \frac{4}{5}$

f) $2\frac{3}{7} \div 4\frac{2}{3}$

g) $3\frac{1}{4} \div \frac{4}{8}$

h) $-\frac{2}{5} \div \frac{2}{6}$

i) $-\frac{4}{5} \div (-\frac{1}{3})$

j) $-2\frac{1}{5} \div (-5\frac{1}{6})$

4. Find:

a. $\frac{3}{4} \div \frac{2}{5} + \frac{5}{8} \times \left(\frac{-2}{5}\right)$

b. $\left(\frac{2}{5} - \frac{15}{12}\right) \div \frac{3}{2}$

c. $\frac{1}{5} \div \frac{2}{5} \times \left(-\frac{1}{5} - \frac{3}{10}\right)$

d. $-\frac{12}{36} + 2 \times \frac{4}{8} - 3\frac{1}{4} \div 1\frac{2}{3}$

Word problems

1. Denis bought 75kg of chocolate. He packed the chocolate equally in 7 bags. How much chocolate did he pack in each bag?
2. Sepanta earned 2,100\$. He spent $\frac{1}{3}$ on rent and $\frac{1}{5}$ on food. How much money did he have left?
3. Nina walked $4\frac{1}{5}$ km. Hana walked $2\frac{1}{4}$ km less than Nina.
 - a) How far did they walk altogether?
 - b) How many km are left to complete 8 km in total?
4. Magnus ate $\frac{1}{3}$ cake. Alexi ate $\frac{1}{4}$ cake more than Magnus. How much cake did they eat altogether?
5. Viki bought 2 litres of milk. She drank $\frac{1}{5}$ of it and gave $\frac{3}{8}$ liters to her friend. How much milk did Viki have left?
6. Tamara bought $3\frac{1}{6}$ kg of sugar. She used $2\frac{1}{3}$ kg while baking cookies. How much sugar did she have left?

- a) If she decides to give half of the remaining sugar to Rebeka, how much will Rebeka have to bake her cookies?
 b) Were the cookies tasty?
7. Two friends shared a pack of potato chips. One day they ate $\frac{1}{2}$ of it and the next day they ate $\frac{1}{3}$ of the remaining.
 a) What fraction of the pack remains for the third day?
 b) If they share what is left equally, what will their portion be?
8. Two friends shared a pack of potato chips. One day they ate $\frac{1}{2}$ of it and the next day they ate $\frac{1}{3}$ of the original pack.
 c) What fraction of the pack remains for the third day?
 d) If they share what is left equally, what will their portion be?
9. Which is the better score in a mathematics test, 29 out of 32 or 7 out of 8?

Unitary method

If $\frac{4}{5}$ of a monthly salary is 800 € then:
 $\frac{1}{5}$ of the salary is $800 \div 4 = 200$ €
 $\frac{3}{5}$ of the salary is $200 \times 3 = 600$ €
 $\frac{5}{5}$ is the full salary: $200 \times 5 = 1000$ €

Exercises

10. $\frac{2}{3}$ of an amount of money is \$ 580. Find:
 a. $\frac{1}{3}$ of the money b. the whole amount.
11. $\frac{4}{11}$ of Magnus' daily free time is spent in talking with his friends. He then spends the rest, which is 77 min, in studying. Calculate how many minutes he spends talking and how much free time he has in total.

12. Helena gives $\frac{7}{13}$ of her weekly money to buy a new book. If the rest of her money is 12 €, how much does the book cost?

13. $\frac{3}{11}$ of a field is searched for mushrooms and 39 were found. How many mushrooms we expect to find in the rest of the field?

14. Our pet picked $\frac{1}{4}$ of his oranges last week and this week he picked $\frac{1}{3}$ of them. So far, he's picked 2540 kg of oranges. What is the total weight of oranges he expects to pick?



15. The pet also cultivates carrots. He sent $\frac{2}{5}$ of his carrot crop to market last week. This week he sent $\frac{2}{3}$ of the remainder.

- What fraction of the crop has gone to market so far?
- If he has 840 kg remaining, what was the original weight of his crop?



© MARIK ANDERSON

WWW.ANDERSTOONS.COM



"To show you how well I understand fractions,
I only did half of my homework."