Rational Numbers MORE...

SEMINAR NOTES

Learning Guide 6

$$\frac{1}{2} \times \frac{20}{18} = \frac{20}{36}$$

GCF: 4

$$\frac{20 \div 4}{36 \div 4} = \boxed{\frac{5}{9}}$$

Keep Chewbacca Fly

When dividing fractions, always remember to:

Keep
Keep the first number/fraction the same

Change
Change the division sign to multiplication

Flip
Flip the second number/fraction

Multiplying Basic Fractions

When multiplying basic fractions look to cross cancel before multiplying to make the multiplication easier.

Ex. Find the product of the following fractions.

SIMPLIFY BEFORE YOU MULTIPLY

$$\frac{\overset{3}{\cancel{6}}}{\underset{5}{\cancel{10}}} \times \frac{\overset{2}{\cancel{4}}}{\underset{7}{\cancel{14}}} = \frac{3}{5} \times \frac{2}{7} = \frac{6}{35}$$

Cross cancel, if possible.

Rewrite after canceling.

Multiply the numerators, multiply the denominators.

Try $\dfrac{11}{5} \times \dfrac{25}{77}$

Find the product each of the following:

$$\frac{7}{5} \times \frac{2}{3} = \qquad \left(\frac{-3}{4}\right) \times \left(\frac{2}{5}\right) = \qquad \left(\frac{6}{7}\right) \times \left(-\frac{14}{3}\right) = \qquad \left(\frac{-1}{12}\right) \times \left(\frac{9}{-4}\right) =$$

Multiplying Rational Numbers

When multiplying rational numbers, change mixed numbers to improper fractions first, cross cancel, then multiply across the numerators and denominators.

Ex. Find the product of the following fractions.

$$\left(-2\frac{1}{2}\right) \times \left(1\frac{3}{10}\right) = \frac{-5}{2} \times \frac{13}{10} = \frac{-13}{4}$$ Change to a mixed number. $= -3\frac{1}{4}$

Optional

Change to improper fractions. | Cross cancel, if possible.

Decide on the sign using the even & odd rule.

Multiply the numerators, multiply the denominators.

Try $-3\frac{1}{5} \times 2\frac{1}{12}$

Find the product each of the following:

$$1\frac{2}{5} \times 2\frac{2}{3} =$$ $$\left(-1\frac{1}{4}\right) \times \left(3\frac{2}{5}\right) =$$ $$\left(-4\frac{6}{7}\right) \times \left(-\frac{14}{17}\right) =$$

Dividing Basic Fractions

When dividing basic fractions it is best to multiply by the reciprocal, then follow the rules for multiplying fractions.

Ex. Find the quotient of the following fractions.

$$\frac{6}{10} \div \frac{14}{4} = \frac{\overset{3}{\cancel{6}}}{\underset{5}{\cancel{10}}} \times \frac{\overset{2}{\cancel{4}}}{\underset{7}{\cancel{14}}} = \frac{3}{5} \times \frac{2}{7} = \frac{6}{35}$$

Multiply the numerators, multiply the denominators.

Multiply by the reciprocal.

Cross cancel, if possible.

Rewrite after canceling.

Try $\dfrac{24}{20} \div \dfrac{15}{35}$

Find the quotient of the following:

$$\frac{7}{5} \div \frac{2}{3} =$$

$$\left(\frac{-5}{4}\right) \div \left(\frac{1}{8}\right) =$$

$$\left(\frac{3}{8}\right) \div \left(-\frac{9}{4}\right) =$$

$$\left(\frac{2}{-3}\right) \div \left(\frac{-6}{7}\right) =$$

Dividing Rational Numbers

When dividing fractions, change to multiplication and write the reciprocal of the second fraction. Use the even & odd rule to find the sign of the answer.

Ex. Find the quotient of the following fractions.

$$\left(-2\frac{1}{3}\right) \div \left(-3\frac{1}{2}\right) = \left(\frac{-7}{3}\right) \div \left(\frac{-7}{2}\right)$$ Multiply by the reciprocal.

Change to improper fractions. $= \left(\frac{-\overset{-1}{\cancel{7}}}{3}\right) \times \left(\frac{-2}{\cancel{7}^{1}}\right)$ Cross cancel.

Rewrite fractions and multiply numerators & denominators $= \left(\frac{-1}{3}\right) \times \left(\frac{-2}{1}\right) = \frac{+2}{3}$ Use the even & odd rule to find the sign of the answer.

Try $\quad 1\frac{3}{5} \div -5\frac{1}{3}$

Find the quotient of the following:

$$2\frac{2}{5} \div \left(-1\frac{2}{3}\right) = \qquad\qquad \left(-1\frac{1}{4}\right) \div \left(3\frac{2}{5}\right) = \qquad\qquad \left(-2\frac{5}{6}\right) \div \left(-3\frac{1}{4}\right) =$$

Use BEDMAS to simplify the following:

$$\frac{4}{5} - \left(\frac{2}{3}\right)\left(\frac{3}{10}\right) = \qquad \left(\frac{-1}{4}\right) \div \left(\frac{3}{8}\right) + \left(\frac{1}{2}\right) = \qquad \left(\frac{5}{6} + \frac{2}{3}\right) \div \left(-\frac{1}{4}\right) =$$

Use BEDMAS to simplify the following:

$$\left(\frac{-2}{3}\right) \div \left(\frac{3}{4}\right) + \left(\frac{1}{3}\right)\left(\frac{1}{3}\right)\left(\frac{1}{2}\right) = \qquad \left(\frac{-2}{3}\right) \div \left[\left(\frac{3}{4}\right) + \left(\frac{1}{3}\right)\right]\left(\frac{1}{3}\right)\left(\frac{1}{2}\right) =$$

Use BEDMAS to simplify the following:

$$\left(-1\frac{1}{2}\right) + \left(\frac{-2}{3}\right)\left(2\frac{3}{4}\right) = \qquad \left(-2\frac{1}{4}\right) \div \left(1\frac{3}{8}\right) + \left(2\frac{1}{2}\right) = \qquad \left(\frac{5}{6} + 2\frac{2}{3}\right) \div \left(-1\frac{3}{4}\right) =$$

Use the formula SA $= 2\pi r^2 + 2\pi rh$ to find the surface area of the following can: