

Prime Factorization Fraction Simplification Practice

Name: _____

Date: _____

Question 1

Simplify the following fractions by prime factorization

I. $\frac{117}{144}$

II. $\frac{52}{256}$

III. $\frac{-595z^3}{672y^2}$

IV. $\frac{71s^2t^2}{113r^2s^2t^3}$

V. $\frac{-1,253y^3z^2}{2,184xy^2z^3}$

VI. $\frac{459r^2st^2}{153r^2st^2}$

Prime Factorization Fraction Simplification Practice

Name: _____ **Key**

Date: _____

Question 1

Simplify the following fractions by prime factorization

I. $\frac{117}{144}$

$$\frac{\cancel{3} \cdot \cancel{3} \cdot 13}{\cancel{3} \cdot \cancel{3} \cdot 2 \cdot 2 \cdot 2 \cdot 2} \longrightarrow \frac{13}{2 \cdot 2 \cdot 2 \cdot 2} \longrightarrow \frac{13}{16}$$

II. $\frac{52}{256}$

$$\frac{\cancel{2} \cdot \cancel{2} \cdot 13}{\cancel{2} \cdot \cancel{2} \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2} \longrightarrow \frac{13}{2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2} \longrightarrow \frac{13}{64}$$

III. $\frac{-595z^3}{672y^2}$

↓ ignore negative

$$\frac{\cancel{7} \cdot 5 \cdot 17 \cdot z \cdot z \cdot z}{2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot \cancel{7} \cdot y \cdot y} \longrightarrow \frac{5 \cdot 17 \cdot z \cdot z \cdot z}{2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot y \cdot y} \longrightarrow \frac{85z^3}{96y^2} \xrightarrow{\text{reapply negative}} \frac{-85z^3}{96y^2}$$

IV. $\frac{71s^2t^2}{113r^2s^2t^3}$

prime number 71 prime number 113

$$\frac{71 \cdot \cancel{s} \cdot \cancel{s} \cdot t \cdot t}{113 \cdot r \cdot r \cdot \cancel{s} \cdot \cancel{s} \cdot t \cdot t \cdot t} \longrightarrow \frac{71}{113 \cdot r \cdot r \cdot t} \longrightarrow \frac{71}{113r^2t}$$

V. $\frac{-1,253y^3z^2}{2,184xy^2z^3}$

↓ ignore negative

$$\frac{\cancel{7} \cdot 179 \cdot y \cdot y \cdot z \cdot z}{\cancel{7} \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 13 \cdot x \cdot y \cdot y \cdot z \cdot z \cdot z} \longrightarrow \frac{179 \cdot y}{2 \cdot 2 \cdot 2 \cdot 3 \cdot 13 \cdot x \cdot z} \longrightarrow \frac{179y}{312xz} \xrightarrow{\text{reapply negative}} \frac{-179y}{312xz}$$

VI. $\frac{459r^2st^2}{153r^2st^2}$

$$\frac{\cancel{3} \cdot \cancel{3} \cdot 3 \cdot \cancel{17} \cdot \cancel{t} \cdot \cancel{t} \cdot \cancel{s} \cdot \cancel{t} \cdot \cancel{t}}{\cancel{3} \cdot \cancel{3} \cdot \cancel{17} \cdot \cancel{t} \cdot \cancel{t} \cdot \cancel{s} \cdot \cancel{t} \cdot \cancel{t}} \longrightarrow 3 \text{ OR } \frac{3}{1}$$