

Notes 1-2

Int 2

One-Step Equations with Rational Coefficients

Unit 1

Warm-up:

Evaluate.

Need to get COMMON DENOMINATORS!

1. $\frac{12 \rightarrow 2}{14 \rightarrow 15} \cdot \frac{2}{15} = \frac{24}{210}$ then reduce!

2. $\frac{7 \cdot 3}{7 \cdot 4} + \frac{18 \cdot 4}{7 \cdot 4} = \frac{21}{28} + \frac{72}{28} = \frac{93}{28}$

OR... ~~$\frac{12}{14} \cdot \frac{2}{15}$~~ = $\frac{4 \cdot 1}{7 \cdot 5} = \frac{4}{35}$
 Cross simplify!

Add the numerators then reduce if possible.

Vocabulary:

- Reciprocal:** A fraction flipped upside down

$\frac{3}{4} \rightarrow \frac{4}{3}$ $-\frac{2}{7} \rightarrow -\frac{7}{2}$ $\frac{1}{10} \rightarrow \frac{10}{1}$ or 10 $2 \rightarrow \frac{1}{2}$

- Inverse Operation:**

opposite operation

$+$ \rightarrow $-$
 \cdot \rightarrow \div

$x + 2 = 5$
 $-2 \quad -2$
 $x = 3$ → inverse operation

- Multiplicative Inverse:** 2 #'s that multiply together to get 1.

$\frac{5}{4} \cdot \frac{4}{5} = \frac{20}{20} = 1$

$\frac{1}{2} \cdot \frac{2}{1} = \frac{2}{2} = 1$

$-\frac{5}{3} \cdot -\frac{3}{5} = \frac{15}{15} = 1$

Solving Equations and Inequalities:

Ex. 1:

$\frac{3}{4}x = 18$
 $x = 18 \div \frac{3}{4}$
 Keep change flip
 $18 \cdot \frac{4}{3} = \frac{72}{3} = 24$
 $x = 24$

Ex. 2:

$5.7 + x = -3.4$
 $-5.7 \quad -5.7$
 $x = -9.1$

CHECK our Answer!

$5.7 + 9.1 = -3.4$

$-3.4 = -3.4$

Yes!

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* We can Divide OR multiply by the RECIPROCAL!

Ex. 3: $3 \cdot \frac{-9}{2} - \frac{2}{9}d = \frac{4}{1} \cdot \frac{-9}{2}$

$\left(\frac{18}{18}\right) \cdot d = \frac{4}{1} \cdot \frac{-9}{2}$

$1 \cdot d = \frac{-18}{1}$

$d = -18$



$d < -18$

↑
open
dot
LESS
THAN

Same work as other problem.
Inverse operation was to multiply by a - on both sides, so FLIP the $<$ $>$

Multiply by the reciprocal

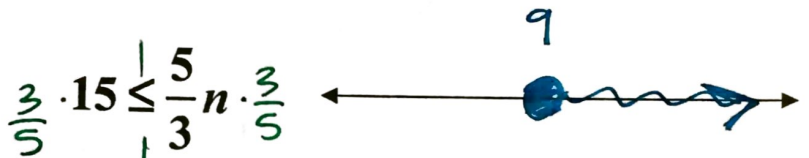
Ex. 4: $\frac{3}{5} \cdot 15 = \frac{5}{3}n \cdot \frac{3}{5}$

$\frac{3}{5} \cdot \frac{15}{1} = n$

$\frac{3 \cdot 3}{1 \cdot 1} = n$

$\frac{9}{1} = n$

$9 = n$ or $n = 9$



$9 \leq n$

or $n \geq 9$

↓
Closed dot.
Greater than

Ex. 5: $x + 3\frac{1}{4} > 2\frac{1}{2}$

$x > 2\frac{1}{2} - 3\frac{1}{4}$

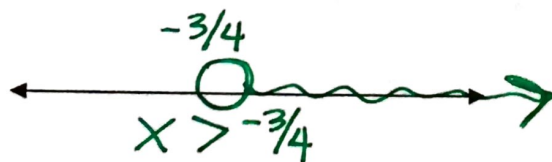
turn into improper

Get common denominators

$2 \cdot \frac{5}{2} - \frac{13}{4}$

$\frac{10}{4} - \frac{13}{4}$

$x > -\frac{3}{4}$



ONLY FLIP $<$ $>$ if your inverse operation is to \cdot or \div by a $-$ #

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Ex. 6: $\frac{5}{7} = -1$

$$\frac{5}{7} = -1$$

$$\frac{5}{7} = -y$$

$$\frac{-5}{7} = y$$

- switches sides

Ex. 7: $4 \geq x - 5.7$

$$4 \geq x - 5.7$$

$$+5.7 \quad +5.7$$

$$9.7 \geq x \quad \text{or} \quad x \leq 9.7$$

9.7

Ex. 8: $4\frac{1}{6} = 3\frac{1}{3}c$ change to improper

$$4\frac{1}{6} = 3\frac{1}{3}c$$

$$\frac{3}{10} \cdot \frac{25}{6} = \frac{10}{8} \cdot c \cdot \frac{8}{10}$$

multiply by the reciprocal

$$\frac{3}{10} \cdot \frac{25}{6} = \frac{10}{8} \cdot c$$

cross simplify!

$$\frac{1.5}{2.2} = c$$

$$\frac{5}{4} = c$$

Ex. 10: $\frac{-7}{6} - 24 = -\frac{6}{7}p$

$$\frac{-7}{6} - 24 = -\frac{6}{7}p$$

$$\frac{-7}{6} \cdot \frac{-24}{1} = p$$

$$\frac{-7 \cdot -4}{1 \cdot 1} = p$$

$$\frac{28}{1} = p$$

$$28 = p$$

same process!

Ex. 9: $-1.4m = 2.1$

$$-1.4m = 2.1$$

$$\frac{-1.4m}{-1.4} = \frac{2.1}{-1.4}$$

$$m = -1.5$$

Ex. 11: $1\frac{1}{2}s = 16\frac{1}{2}$

$$1\frac{1}{2}s = 16\frac{1}{2}$$

$$\frac{2}{3} \cdot \frac{3}{2} \cdot s = \frac{33}{2} \cdot \frac{2}{3}$$

$$\frac{6}{6} \cdot s = \frac{11}{1}$$

$$1 \cdot s = 11$$

$$s = 11$$