

Homework Qs

Note Title

6/6/2017

1.1 # ~~7~~ Similar to #7

Evaluate $\frac{7}{6}h$ for $h=10$

$$\frac{7}{6}(10) = \frac{7}{6}\left(\frac{10}{1}\right) = \frac{\cancel{70}^{35}}{\cancel{6}_3} = \boxed{\frac{35}{3}}$$

#7) Evaluate $\frac{6}{5}h$ for $h=10$.

$$\frac{6}{5}(10) = \frac{6}{5}\left(\frac{10}{1}\right) = \frac{60}{5} = \boxed{12}$$

1.2 #59) $10 + |-6|$

"Ten plus the absolute value of -6"

$$= 10 + 6 = \boxed{16}$$

Ex: $3 + |5| + |-7| + |0|$

$$= 3 + 5 + 7 + 0 = \boxed{15}$$

Ex: $4 - |6| - |12| - |-2|$

$$= 4 - 6 - 12 - 2$$

$$= -2 - 12 - 2$$

$$= -14 - 2 = \boxed{-16}$$

OR

$$4 - 6 - 12 - 2$$

$$= -2 - 14$$

$$= -16$$

EX: $4 - 6 - 12 - (-2)$
 $= -14 - (-2)$
 $= -14 - 1(-2)$
 $= -14 + 2$
 $= \boxed{-12}$

EX: $5 - 7|-2|$
 $= 5 - 7(2)$
 $= 5 - 14 = \boxed{-9}$

1.4: Subtraction of Real Numbers

Ex. $5 + (-7)$ is the same as $5 - 7$.
Equal to $\boxed{-2}$

Ex. $-10 - 8$ same as $-10 + (-8)$
 $= \boxed{-18}$

Ex. $29 - 7$
 $= \boxed{22}$

Ex. $-29 + 7$
 $= \boxed{-22}$

Ex. $7 - 29$
 $= \boxed{-22}$

Ex. $-7 + 29$
 $= \boxed{22}$

Ex. $7 + 29$
 $= \boxed{36}$

Ex. $-7 - 29$
 $= \boxed{-36}$

Ex. $-29 - 7$
 $= \boxed{-36}$

Ex. $5 - (-6)$
 $= 5 + 6$
 $= \boxed{11}$

Ex. $-\frac{3}{5} - (-\frac{1}{5})$
 $= -\frac{3}{5} + \frac{1}{5}$
 $= \boxed{-\frac{2}{5}}$

1.5: Multiplication and Division of Real Numbers

Ex: We can indicate multiplication with a dot or with parentheses.

Ex: $3(5)$
 $= \boxed{15}$

Ex: $4(8)$
 $= \boxed{32}$

or $3 \cdot 5$
 $= \boxed{15}$

$4 \cdot 8$
 $= \boxed{32}$

Ex: $\frac{3}{5} \cdot \frac{2}{7} = \boxed{\frac{6}{35}}$ or $\frac{3}{5} \left(\frac{2}{7} \right) = \boxed{\frac{6}{35}}$

Ex: $3(-5) = \boxed{-15}$ (Don't write $3 \cdot -5$)

Ex: $3(5)$
 $= \boxed{15}$

Ex: $-3(5)$
 $= \boxed{-15}$

Ex: $-3(-5)$
 $= \boxed{15}$

Ex: $\left(-\frac{1}{4}\right)(-6) = \left(-\frac{1}{4}\right)\left(\frac{-6}{1}\right) = + \frac{\cancel{6}^3}{\cancel{4}_2} = \boxed{\frac{3}{2}}$

Division

Ex: $\frac{40}{8} = \boxed{5}$

because $8(?) = 40$
↑ 5

Ex: $\frac{40}{-8} = \boxed{-5}$

because $-8(-5) = 40$

Ex: $\frac{-40}{8} = \boxed{-5}$

because $8(?) = -40$
↑ -5

Ex: $\frac{-40}{-8} = \boxed{5}$

because $-8(5) = -40$

Ex: $\frac{-40}{-5} = \boxed{8}$

because $-5(8) = -40$

Ex: $\frac{8}{-40} = -\frac{\cancel{8}}{\cancel{40}} = \boxed{-\frac{1}{5}}$
5

Ex: $\frac{40}{8} = \frac{40 \div 8}{8 \div 8} = \frac{5}{1} = \boxed{5}$

Note:

$\frac{40}{8}$ means the same as

$40 \div 8$

Ex: $\frac{0}{12} = \boxed{0}$

because $12(?) = 0$

answer: 0

$12(0) = 0$

Ex: $\frac{12}{0} \Rightarrow \underline{\text{undefined}}$

because

$0(?) = 12$

is impossible

What about $\frac{0}{0}$?

$$\frac{0}{0} =$$

$$\underset{\substack{\uparrow \\ \text{denominator}}}{0} (?) = 0 \underset{\substack{\uparrow \\ \text{numerator}}}{0}$$

is true no matter what we put in the parentheses ... lots of numbers would work.

So, $\frac{0}{0}$ is also undefined.

(Sometimes called indeterminate)

★ Important: Division by 0 is undefined.
★ We can never have a zero denominator.

Ex: $\frac{-2}{8} = \boxed{-\frac{1}{4}}$

Ex: $\frac{2}{-8} = \boxed{-\frac{1}{4}}$

Ex: $-\frac{2}{8} = \boxed{-\frac{1}{4}}$

Ex: $\frac{-2}{-8} = \boxed{\frac{1}{4}}$

So, all these are equivalent:

$$-\frac{a}{b} = \frac{-a}{b} = \frac{a}{-b}$$

Ex.: $-\frac{3}{5} \left(\frac{1}{2} \right) = \boxed{-\frac{3}{10}}$

Ex.: $-\frac{2}{3} \left(-\frac{6}{5} \right)$
 $= + \frac{\cancel{12}^4}{\cancel{15}_5} = \boxed{\frac{4}{5}}$

Ex.: $-\frac{2}{5} (-6) \left(-\frac{1}{4} \right)$
 $= -\frac{2}{5} (-\cancel{6}_1) \left(-\frac{1}{4} \right)$
 $= -\frac{12}{5} \left(-\frac{1}{4} \right)$
 $= -\frac{\cancel{12}^3}{\cancel{20}_4}$
 $= \boxed{-\frac{3}{5}}$

Ex.: $\frac{1}{3} \left(-\frac{3}{7} \right) \left(-\frac{9}{4} \right)$
 $= + \frac{27 \div 3}{84 \div 3} = \boxed{\frac{9}{28}}$

$\frac{-12 \div 4}{20 \div 4}$

Ex.: $\underbrace{-2(-2)}_{+4} \underbrace{(-2)(-2)}_{+4} \underbrace{(-2)}_{-2} = (-2)^5$
 $= 16(-2) = \boxed{-32}$

Division with fractions

Ex.: $\frac{2}{3} \div 4$

Rewrite as: $\frac{2}{3} \cdot \frac{1}{4} = \frac{2}{12} = \boxed{\frac{1}{6}}$

Dividing by a number is
equivalent to multiplying by its
reciprocal.

Note Reciprocal of 4 is $\frac{1}{4}$

Reciprocal of $\frac{2}{3}$ is $\frac{3}{2}$

Reciprocal of $-\frac{3}{5}$ is $-\frac{5}{3}$.

Two numbers are reciprocals if their
product (what we get by multiplying them)
is 1.

Ex: $\frac{3}{5} \div \frac{2}{9}$

$$= \frac{3}{5} \cdot \frac{9}{2} = \boxed{\frac{27}{10}}$$

Ex: $-\frac{3}{5} \div (-6)$

$$= -\frac{3}{5} \div \frac{-6}{1} = -\frac{3}{5} \left(\frac{1}{-6} \right) = \frac{\cancel{3}}{\cancel{3}0}$$

$$= \boxed{\frac{1}{10}}$$

Ex.:

$$\frac{\frac{2}{3}}{\frac{4}{5}} = \frac{2}{3} \cdot \frac{5}{4} = \frac{8}{12} = \boxed{\frac{5}{6}}$$