Math 115

Fall 2017

Lecture 2

Class Quiz Write Your name clearly

① Evaluate: $5^2-(-4)^2$

$= 25-(16) = 25-16 = \boxed{9}$

Box Your Final Answer.

② Evaluate $\dfrac{x-y}{2x}$ for $x=4$ and $y=-4$.

$= \dfrac{4-(-4)}{2(4)} = \dfrac{4+4}{8} = \dfrac{8}{8} = \boxed{1}$

③ Translate: 3 less than twice Some number.

$\boxed{2x-3}$

Ch. 1

Reduce a fraction

$$\frac{45}{75} = \frac{3\cdot 3\cdot 5}{3\cdot 5\cdot 5} = \frac{3}{5}$$

$$\frac{120}{300} = \frac{12\cdot 10}{30\cdot 10} = \frac{12}{30} = \frac{6\cdot 2}{6\cdot 5} = \frac{2}{5}$$

Simplify

$$\frac{65x^2}{80x} = \frac{5\cdot 13\cdot x\cdot x}{5\cdot 16\cdot x} = \boxed{\frac{13x}{16}}$$

Divide: $\frac{10}{33} \div \frac{25}{77} = \frac{10}{33}\cdot\frac{77}{25}$

$$= \frac{5\cdot 2}{3\cdot 11}\cdot\frac{7\cdot 11}{5\cdot 5}$$

$$= \boxed{\frac{14}{15}}$$

Simplify $\frac{12x^2}{25y^3} \div \frac{18x^4}{35y^5} = \frac{12x^2}{25y^3}\cdot\frac{35y^5}{18x^4}$

(2, 5, 7, 3)

$$= \boxed{\frac{14y^2}{15x^2}}$$

Simplify $\frac{3}{5} - \frac{-2}{5} = \frac{3-(-2)}{5}$

$= \frac{3+2}{5} = \frac{5}{5} = 1$

Simplify: $\frac{3x+7}{10} + \frac{7x-7}{10} = \frac{3x+7+7x-7}{10}$

$= \frac{\cancel{10}x}{\cancel{10}} = 1x$

$= \boxed{x}$

Simplify $\frac{2}{3} - \frac{1}{4} = \frac{2 \cdot 4}{3 \cdot 4} - \frac{1 \cdot 3}{4 \cdot 3}$

we must find LCD

LCD = 12

$= \frac{8}{12} - \frac{3}{12} = \frac{8-3}{12}$

$= \boxed{\frac{5}{12}}$

Simplify

$\frac{3}{25} - \frac{7}{10} = \frac{3 \cdot 2}{25 \cdot 2} - \frac{7 \cdot 5}{10 \cdot 5}$

$25 = 5 \cdot 5$

$10 = 5 \cdot 2$

$LCD = 5 \cdot 5 \cdot 2$

LCD = 50

$= \frac{6}{50} - \frac{35}{50} = \boxed{\frac{-29}{50}}$

Reduce/ Simplify:

1) $\dfrac{\overset{2}{\cancel{16}}x^5}{\underset{3}{\cancel{24}}x^2} = \boxed{\dfrac{2x^3}{3}}$

2) $\dfrac{75}{49} \div \dfrac{-14}{25}$

$= \dfrac{75}{49} \cdot \dfrac{-25}{14} = \boxed{\dfrac{-1875}{686}}$

3) $\dfrac{x-12}{2x+1} + \dfrac{x+13}{2x+1}$

$= \dfrac{x-12+x+13}{2x+1} = \dfrac{2x+1}{2x+1} = \boxed{1}$

4) $\dfrac{5}{12} - \dfrac{9}{16}$

$= \dfrac{5\cdot 4}{12\cdot 4} - \dfrac{9\cdot 3}{16\cdot 3}$

$= \dfrac{20}{48} - \dfrac{27}{48}$

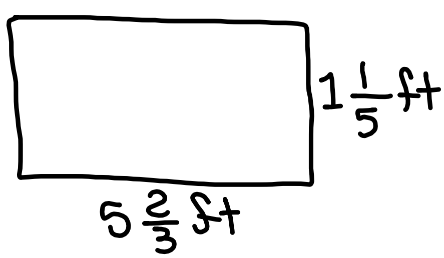
$= \boxed{\dfrac{-7}{48}}$

$12 = 2\cdot 2\cdot 3$

$16 = 2\cdot 2\cdot 2\cdot 2$

$\Rightarrow LCD = 48$

Find the area



Area = L · W

$A = L\cdot W$

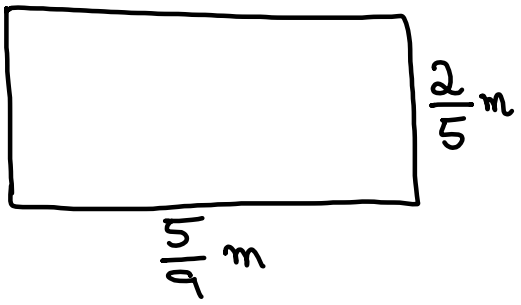
$= 5\frac{2}{3} \cdot 1\frac{1}{5}$

$= \dfrac{17}{\cancel{3}} \cdot \dfrac{\overset{2}{\cancel{6}}}{5}$

$= \dfrac{34}{5} = \boxed{6\frac{4}{5}\ ft^2}$

$5\,\overline{)\,34}$ = 6, -30, remainder 4

Find the perimeter



$P = 2L + 2W$

$P = 2 \cdot \frac{5}{9} + 2 \cdot \frac{2}{5}$

$= \frac{2}{1} \cdot \frac{5}{9} + \frac{2}{1} \cdot \frac{2}{5}$

$= \frac{10}{9} + \frac{4}{5}$

LCD = 45

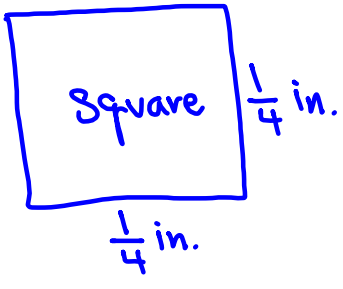
$= \frac{10 \cdot 5}{9 \cdot 5} + \frac{4 \cdot 9}{5 \cdot 9}$

$= \frac{50}{45} + \frac{36}{45} = \frac{86}{45}$

$= 1\frac{41}{45}$ m

Find area & Perimeter

$A = s^2$, $P = 4s$



$A = \left(\frac{1}{4}\right)^2 = \frac{1}{4} \cdot \frac{1}{4}$

$= \boxed{\frac{1}{16} \text{ in}^2}$

$P = 4\left(\frac{1}{4}\right) = \frac{4}{1} \cdot \frac{1}{4} = \frac{4}{4} = \boxed{1 \text{ in}}$

Translate

1) Square of Some number reduced by 8

$x^2 - 8$

2) 10 more than Some number cubed.

$x^3 + 10$

3) -4 times the difference of 10 and x.

$-4 \cdot (10 - x)$

4) Twice the Sum of Some number and 6 is equal to 10 less the number

$2(x + 6) = 10 - x$

A less B → A-B

A less than B → B-A

5) when 5 is added to half Some number, the result is 5 less than one-third of the number.

$\frac{1}{2}x + 5 = \frac{1}{3}x - 5$

Properties of real numbers:

1) Commutative Prop.

$a+b=b+a$ $\quad 7+3=3+7$

$a\cdot b=b\cdot a$ $\quad 5\cdot(-4)=(-4)\cdot 5$

2) Associative Prop.

$(a+b)+c=a+(b+c)$

$a(bc)=(ab)c$

$-8(5x)=(-8\cdot 5)x$

$6x+8=8+6x$

$7(x+2)=(x+2)\cdot 7$

$(7+2)+8=7+(2+8)$

$4(3x)=(4\cdot 3)x$

$(4x+10)+8=4x+(10+8)$

3) Distributive Prop.

$a(b+c)=ab+ac$

$4(x+2)=4x+4\cdot 2$

$-6(5+y)=-6\cdot 5+(-6\cdot y)$

4) Identity Prop

$a+0=a$ $\quad 7+0=7$

$a\cdot 1=a$ $\quad -100\cdot 1=-100$

$-3x+0=-3x$

$4xy^2\cdot 1=4xy^2$

5) Inverse Prop.

$a + (-a) = 0$ $\quad 23 + (-23) = 0$

$a \cdot \frac{1}{a} = 1 \; ; a \neq 0$ $\quad 4 \cdot \frac{1}{4} = 1$

$-8x + 8x = 0$

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

Simplify

$5(x + 2) - 10$

$= 5x + 10 - 10$ Distribute

$= 5x + 0$ Inverse

$= 5x$ Identity

Simplify

$2(\frac{1}{2}x - 1) + 2$

$= 2(\frac{1}{2}x) - 2 \cdot 1 + 2$ Distribution

$= (2 \cdot \frac{1}{2})x - 2 \cdot 1 + 2$ Associative

$= 1x - 2 \cdot 1 + 2$ Inverse

$= x - 2 + 2$ Identity

$= x + 0$ Inverse

$= x$ Identity

Simplify

$4(2x+5)-5(x+4)$

$=4(2x)+4(5)-5x-5(4)$ Distribution

$=(4\cdot 2)x+20-5x-20$ Associative

$=8x+20-5x-20$

$=8x-5x+20-20$ Commutative

$=3x+0$ Inverse

$=3x$ Identity

Simplify and name the properties:

$\frac{3}{5}\left(\frac{5}{3}x+1\right)-\frac{3}{5}$

$=\frac{3}{5}\left(\frac{5}{3}x\right)+\frac{3}{5}\cdot 1-\frac{3}{5}$ Distribution

$=\left(\frac{3}{5}\cdot\frac{5}{3}\right)x+\frac{3}{5}\cdot 1-\frac{3}{5}$ Associative

$=1\cdot x+\frac{3}{5}\cdot 1-\frac{3}{5}$ Inverse

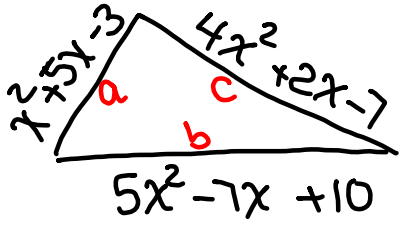
$=x+\frac{3}{5}-\frac{3}{5}$ Identity

$=x+0$ Inverse

$=x$ Identity

Find an expression in simplest form for the perimeter of

$P = a + b + c$



$P = x^2+5x-3+4x^2+2x-7+5x^2-7x+10$

Commutative

$P = x^2+4x^2+5x^2+5x+2x-7x-3-7+10$

$= 10x^2+0+0$ Inverse

$= 10x^2$ Identity.

Translate, then Simplify

4 times the sum of -2 and 3 times some number increased by 8.

$4(-2+3x)+8$

$= 4(-2)+4(3x)+8$

$= -8+4(3x)+8$

$= 4(3x)-8+8$

$= (4\cdot3)x-8+8$

$= 12x+0$

$= \boxed{12x}$

Agenda for tomorrow:

1) Collect SG 1 at 9:00 AM

2) Class Qz 2 at 9:00 AM

3) Start on ch. 2

Start working on ch. 1 of Word Problems.