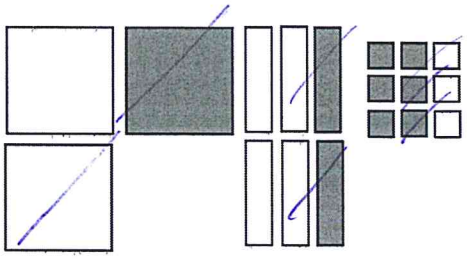
Station A

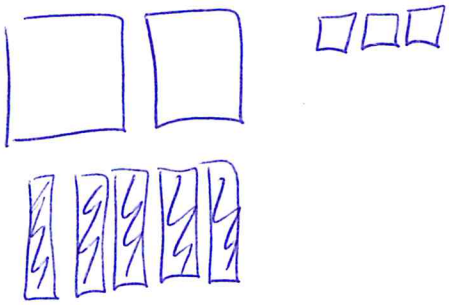
1. Write the simplified expression represented by the tiles. (shaded is negative)

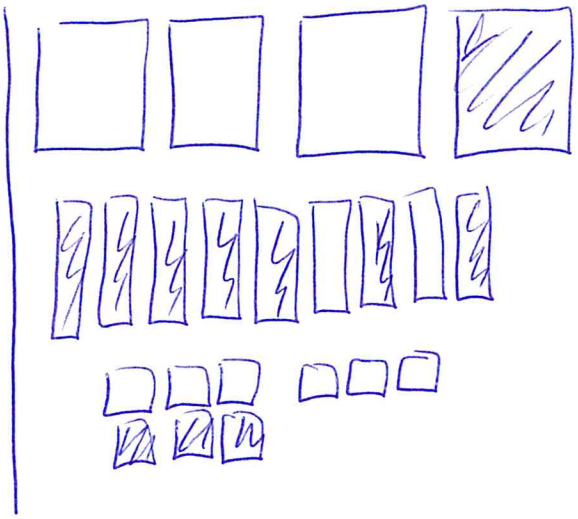


$x^2 + 2x - 3$

2. Draw 2 different sets of tiles that represent $2x^2 - 5x + 3$.

many answers





3. Simplify each expression by collecting like terms.

a) $5x + (-3) + (-3x) - (-4)$

$= 5x - 3 - 3x + 4$

$= 2x + 1$

b) $5x^2 + 1 - 3x + 4x^2 - 7x - 4$

$= 9x^2 - 10x - 3$

Station B

1. Simplify

a) $(4m^2-7m+3)+(2m^2-3m-1)$

$= 4m^2-7m+3+2m^2-3m-1$

$= 6m^2-10m+2$

b) $(3x^2-2x+7)-(5x^2-3x-4)$

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

$= -2x^2+x+11$

2. Simplify FIRST, then evaluate for k=-3.

$(k+3)-(2k^2-3k+4)-(3k^2-1)+(5k-3)$

$= k+3-2k^2+3k-4-3k^2+1+5k-3$

$= -5k^2+9k-3$

sub $k=-3$

need this statement

$= -5(-3)^2+9(-3)-3$

$= -5(9)-27-3$

$= -45-27-3$

$= -75$

3. The length of a rectangle is 3 less than twice the width. Determine a simplified expression for the perimeter of the rectangle.

$P=(2w-3)+w+(2w-3)+w$

$P=2w-3+w+2w-3+w$

$P=6w-6$

Station C

1. Simplify.

a) $(x^6)(x^3)$

$= x^9$

b) $\frac{y^{10}}{y^{-4}}$

$= x^{14}$

c) $(x^5)^2$

$= x^{10}$

d) $\frac{(x^{-5})(x^7)}{x^6}$

$= \frac{x^2}{x^6}$

$= x^{-4}$

2. Simplify.

a) $(5x^3y^{-2})(-2x^5y^1)$

$= -10x^8y^{-1}$

b) $\frac{-2x^5y}{8xy^{-3}}$

$= -\frac{1}{4}x^4y^4$

c) $(-4x^5y^{-3})^2$

$= 16x^{10}y^{-6}$

3. Simplify.

a) $(2x^3y^{-1})(-xy^5)^2$

$= (2x^3y^{-1})((-1)^2x^2y^{10})$

$= 2x^5y^9$

b) $\frac{(6a^3b^2)^2}{(-2a^2b)^3}$

$= \frac{6^2a^6b^4}{(-2)^3a^6b^3}$

$= \frac{36a^6b^4}{8a^6b^3}$

$= \frac{9}{2}b$

c) $\frac{(-3m^4n^5)^3(2mn^3)^2}{(-2m^{-1}n^2)^3}$

$= \frac{((-3)^3m^{12}n^{15})(2^2m^2n^6)}{(-2)^3m^{-3}n^6}$

$= \frac{(-27m^{12}n^{15})(4m^2n^6)}{-8m^{-3}n^6}$

$= \frac{-108m^{14}n^{21}}{-8m^{-3}n^6}$

$= \frac{27}{2}m^{17}n^{15}$

Station D

1. Simplify.

a) $5(3x-4)$

$= 15x - 20$

b) $-2x(7x+1)$

$= -14x^2 - 2x$

c) $3a^2b(5ab-2ab^3)$

$= 15a^3b^2 - 6a^3b^4$

d) $2x(3y-4xy^2)-3(3xy-7x^2y^2)$

$= 6xy - 8x^2y^2 - 9xy + 21x^2y^2$

$= 13x^2y^2 - 3xy$

2. Solve.

a) $3x-2=10$

$3x = 10+2$

$\frac{3x}{3} = \frac{12}{3}$

$x = 4$

b) $\frac{x}{5} = -2$

$(5)\quad (5)$

$x = -10$

c) $5-3k=-4$

$-3k = -4-5$

$\frac{-3k}{-3} = \frac{-9}{-3}$

$k = 3$

Station E

1. Solve.

a) $3x-4+7x-1=3-4x$

$3x+7x+4x=3+4+1$

$\frac{14x}{14}=\frac{8}{14}$

$x=\frac{4}{7}$

b) $3(2x-5)=4x+2(x-6)$

$6x-15=4x+2x-12$

$6x-4x-2x=-12+15$

$0x=3$

∴ no solution

c) $3(w-4)-2(5-2w)=-4(1-w)-(3w+5)$

$3w-12-10+4w=-4+4w-3w-5$

$3w+4w-4w+3w=-4-5+12+10$

$\frac{6w}{6}=\frac{13}{6}$

$w=\frac{13}{6}$

d) $\frac{x}{3}-5=\frac{2x}{5}+\frac{2}{3}$ LCD=15

$(15)\frac{x}{3}-(15)5=(15)\frac{2x}{5}+(15)\frac{2}{3}$

$5x-75=6x+10$

$5x-6x=10+75$

$\frac{-x}{-1}=\frac{85}{-1}$

$x=-85$

e) $\frac{3x}{2}-\frac{(2x-1)}{6}=2-\frac{3}{4}x$ LCD=12

$(12)\frac{3x}{2}-(12)\frac{(2x-1)}{6}=(12)2-(12)\frac{3}{4}x$

$18x-2(2x-1)=24-9x$

$18x-4x+2=24-9x$

$18x-4x+9x=24-2$

$\frac{23x}{23}=\frac{22}{23}$

$x=\frac{22}{23}$

2. Show a FORMAL CHECK to determine whether or not x=4 is a solution to the equation below. (**no marks for solving....just the check. Don't solve...do a check!!!!)

$7-3(2x-1)=4(3-2x)+6$

check $x=4$

LS	RS
$7-3(2x-1)$	$4(3-2x)+6$
$=7-3(2(4)-1)$	$=4(3-2(4))+6$
$=7-3(8-1)$	$=4(3-8)+6$
$=7-3(7)$	$=4(-5)+6$
$=7-21$	$=-20+6$
$=-14$	$=-14$

∴ LS=RS, x=4

Station F

Create and solve using an algebraic model.

(let statements, equation, solution, concluding statement)

1. One number is 5 less than twice the other number. The sum of the numbers is 22. Find the numbers.

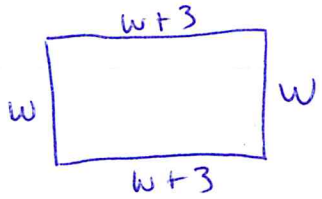
Let x represent the first number.
Let $2x-5$ represent the second number.

$x + 2x - 5 = 22$
$x + 2x = 22 + 5$
$\frac{3x}{3} = \frac{27}{3}$
$x = 9$

$2x - 5$
$= 2(9) - 5$
$= 18 - 5$
$= 13$

∴ The numbers are 9 and 13.

2. The length of a rectangle is 3 more than the width. The perimeter is 34cm. Find the dimensions of the rectangle.



$w + w + 3 + w + w + 3 = 34$
$4w = 34 - 3 - 3$
$\frac{4w}{4} = \frac{28}{4}$
$w = 7$, $w + 3$
$= 7 + 3$
$= 10$

∴ The rectangle is 7cm by 10cm.

3. Liron has 72 coins made of up quarters (25 cents each) and nickels (5 cents each). The total value of the coins is $14.20. How many of each type of coin does Liron have?

Let q represent the # of quarters.
Let $72-q$ represent the # of nickels.

$25q + 5(72-q) = 1420$
$25q + 360 - 5q = 1420$
$25q - 5q = 1420 - 360$
$\frac{20q}{20} = \frac{1060}{20}$
$q = 53$

$72 - q$
$= 72 - 53$
$= 19$

∴ Liron has 53 quarters and 19 nickels.

Station G

1. Solve.

a) $2:7=10:x$

$\frac{2}{7}=\frac{10}{x}$ (×5)

$2x=70$

$x=35$

b) $b:7=17:40$

$\frac{b}{7}=\frac{17}{40}$

$b=\frac{119}{40}$

c) $2:4:x=9:y:20$

$\frac{2}{9}=\frac{4}{y}$ $\qquad$ $\frac{2}{9}=\frac{x}{20}$

$2y=36$ $\qquad$ $9x=40$

$y=18$ $\qquad$ $x=\frac{40}{9}$

2. Solve each of the following by creating an algebraic model and solving.
(let statements, equation, solve, concluding statement)

a) The ratio of yellow to blue for a particular shade of green paint is 2:5. How much blue and how much yellow do you need to make 250 mL of the green paint? (y b, total = 7)

Let b represent the amount of blue (mL).
Let y represent the amount of yellow (mL)

$\frac{\text{blue}}{\text{total}}$: $\frac{5}{7}=\frac{b}{250}$ $\qquad$ $\frac{\text{yellow}}{\text{total}}$: $\frac{2}{7}=\frac{y}{250}$

$\frac{250(5)}{7}=b$ $\qquad$ $\frac{500}{7}=y$

$\frac{1250}{7}=b$

∴ They need $\frac{1250}{7}$ mL of blue and $\frac{500}{7}$ mL of yellow

b) Jesse used 42L of gas to drive 750 km. How far can he drive with 55L of gas?

Let x represent the distance (km)

$\frac{\text{L gas}}{\text{km}}$

$\frac{42}{750}=\frac{55}{x}$

$\frac{42x}{42}=\frac{41250}{42}$

$x=\frac{6875}{7}$

$x\doteq 982$

∴ Jesse can drive 982 km.