Warm Up

Expand and simplify the following expression:

$2x(x-4) = 2x^2 - 8x$

What type of relationship does this represent?

Linear? $y = mx + b$

Exponential? $y = ab^x$

Quadratic

$y = ax^2 + bx + c$

quadratic if the highest exponent on "x" is 2.

Also quadratic if it is the product of 2 linear binomials

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

$x^2 - 2x - 15$

quadratic

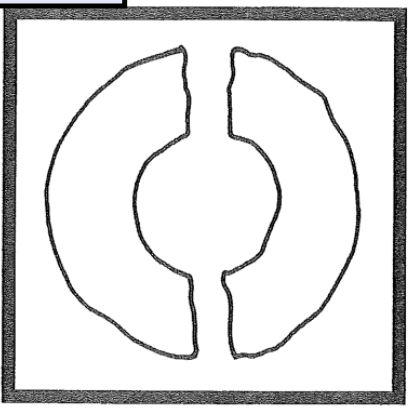
$(x^2+1)(x+3)$

$x^3 + 3x^2 + x + 3$

Homework Questions?

Law of the Donut

What Famous Rule of Donuts Is Illustrated by This Picture?



For the first exercise in each set, find the area of the rectangle. For all other exercises, multiply using the distributive property. Write the letter of the exercise in the box that contains the number of the answer.

S

$n+5$ by $n+2$

A $(n+4)(n+9)$

E $(n-3)(n+10)$

W $(n-6)(n-5)$

O $(2n+2)(3n+8)$

A $(7n+5)(4n-1)$

Answers

16 $n^2+7n+36$
22 $n^2+7n-30$
7 $28n^2-11n-5$
10 $n^2+7n+10$
2 $n^2-11n+30$
13 $28n^2+13n-5$
6 $n^2+13n+36$
14 $n^2+22n+30$
20 $6n^2+22n+16$

E

$5x+1$ by $3x+2$

A $(9x-2)(4x-4)$

L $(6x+1)(3x-2)$

E $(5x-4)(2x+7)$

O $(2x+5y)(x+6y)$

H $(4x-y)(9x-4y)$

Answers

3 $2x^2+17xy+30y^2$
18 $36x^2-20xy+4y^2$
7 $18x^2-9x-2$
19 $36x^2-25xy+4y^2$
4 $18x^2+27x-2$
15 $10x^2+27x-28$
9 $15x^2+13x+2$
8 $10x^2-44x-28$
17 $36x^2-44x+8$

M

t^2+4t-3 by $t+2$

T $(2t-3)(3t^2+2t+5)$

K $(4t+1)(2t^2-7t+2)$

H $(3t-4)(2t^2-t-5)$

L $(8t-3)(t^2+2t+9)$

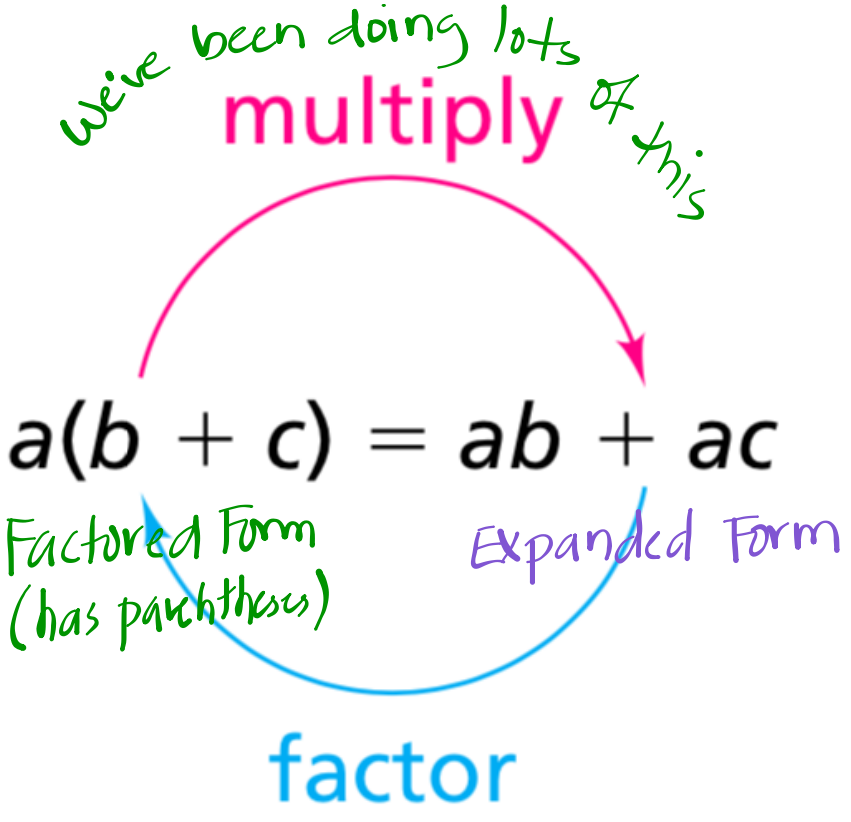
V $(5t+2)(4t^2-3t-10)$

Answers

11 $8t^3-26t^2+60t-27$
21 $8t^3+13t^2+66t-27$
1 $6t^3-5t^2+4t-15$
16 $20t^3+13t^2-50t-20$
12 t^3+6t^2+5t-6
8 $20t^3-7t^2-56t-20$
4 $6t^3-5t^2+8t+20$
14 $8t^3-26t^2+t+2$
5 $6t^3-11t^2-11t+20$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22

We have been practicing taking the factored form of an equation and making it into the expanded form.



Today we will take our expanded form and go back to the factored form.

How do we create a factored form?

$4x - 10$ GCF = 2

$2(2x - 5) = 4x - 10$ ✓

$x^2 + 2x$ GCF = x

$x(x + 2)$

Factored Form

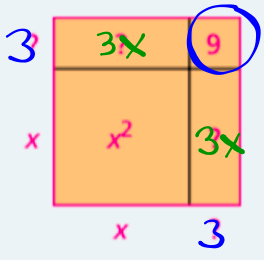
$3x^2 + 6x$ GCF = $3x$

$3x(x + 2)$

Factored Form

Problem 2.3

A **1.** Copy the diagram below. Replace each question mark with the correct length or area.



what multiplies to get 9

$x^2+3x+3x+9$

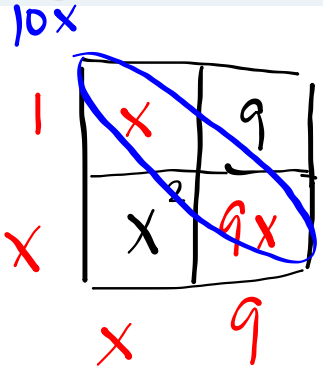
x^2+6x+9

Expanded Form

$(x+3)(x+3)=(x+3)^2$

Factored Form

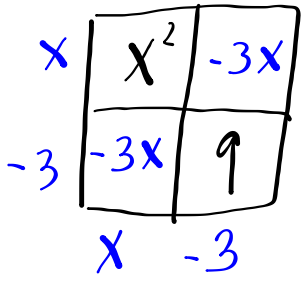
2. Write two expressions for the area of the rectangle outlined in red.



How about 9 and 1

$x^2+10x+9$

$(x+1)(x+9)$



x^2-6x+9

$(x-3)(x-3)$

2. Write two expressions for the area of the rectangle outlined in red.

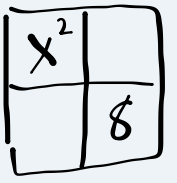
There are 4! Find them all ☺

B Consider the expression $x^2 + bx + 8$.

1. Choose a value for b that gives an expression you can factor. Then, write the expression in factored form.
2. Compare your work with your classmates. Did everyone write the same expressions? Explain.

C For parts (1)–(3), find values of r and s that make the equations true.

1. $x^2 + 10x + 24 = (x + 6)(x + r)$
2. $x^2 + 11x + 24 = (x + s)(x + r)$
3. $x^2 + 25x + 24 = (x + r)(x + s)$
4. Describe the strategies you used to find the values of r and s in parts (1)–(3).



D Alyse sees a pattern in Question C. She says she can use the Distributive Property to factor the expression $x^2 + 10x + 16$. She writes:

$$\begin{aligned} x^2 + 10x + 16 &= x^2 + 2x + 8x + 16 && (1)\\ &= x(x + 2) + 8(x + 2) && (2)\\ &= (x + 2)(x + 8) && (3) \end{aligned}$$

Is Alyse correct? Explain what she did at each step.

Homework

Finish classwork