

Name

Date: Sept 9

Hour: Alg I

Unit 1B Day 14: The Distributive Property

Answer Question: How do I use the distributive property?

A. Without a calculator, multiply: $28 \cdot 3$.

1. Explain your strategy.

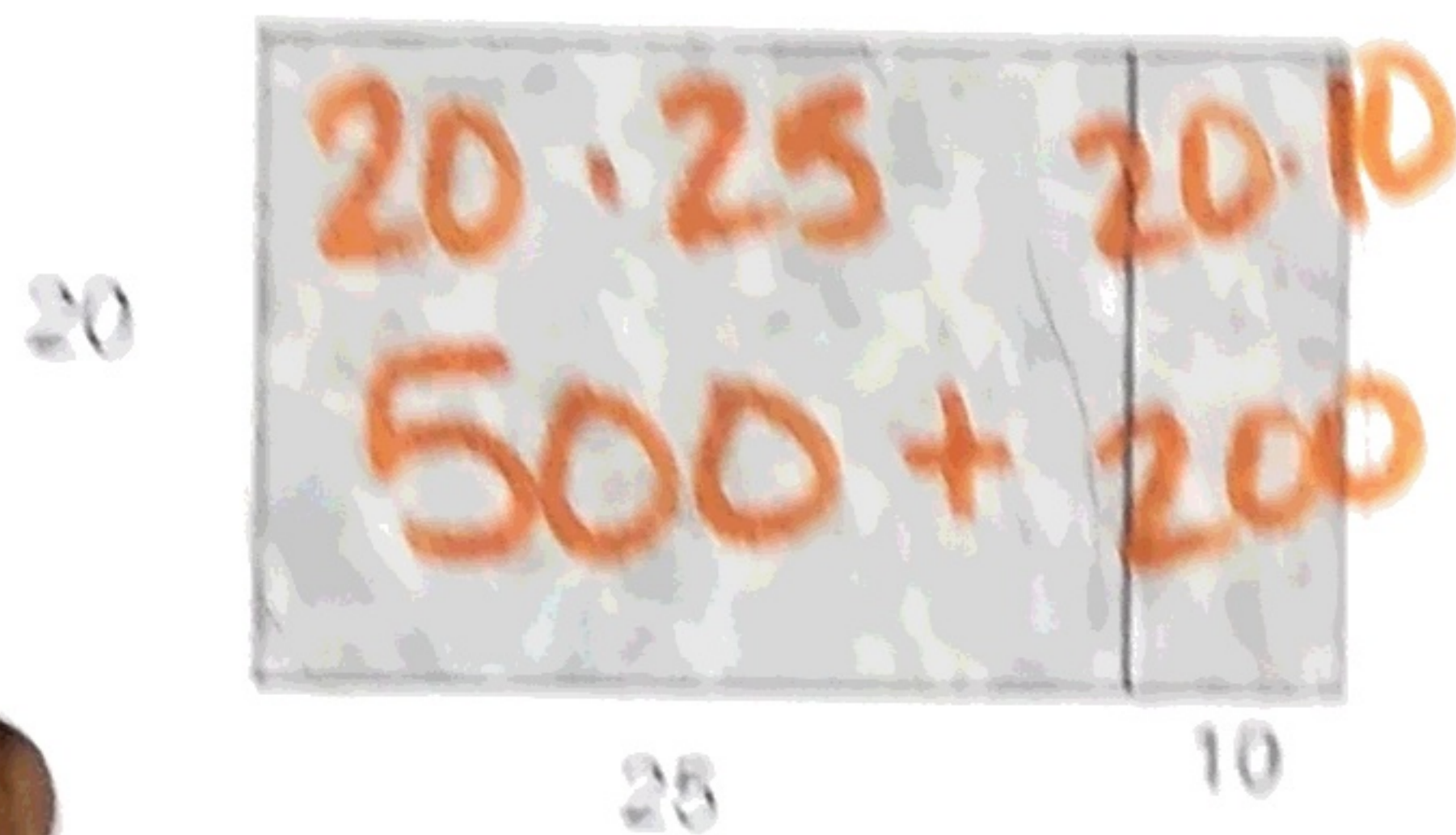
$$(20 + 8)(3) = 60 + 24 = 84$$

2. Use the square strategy

3	60	+ 24	= 84
	20	+ 8	

B. The following pictures are pools with a swimming area and diving area. What is the area of the entire pool?

Pool 1



Area =

$$700$$

Problem you just did:

$$20(25 + 10)$$

Pool 3



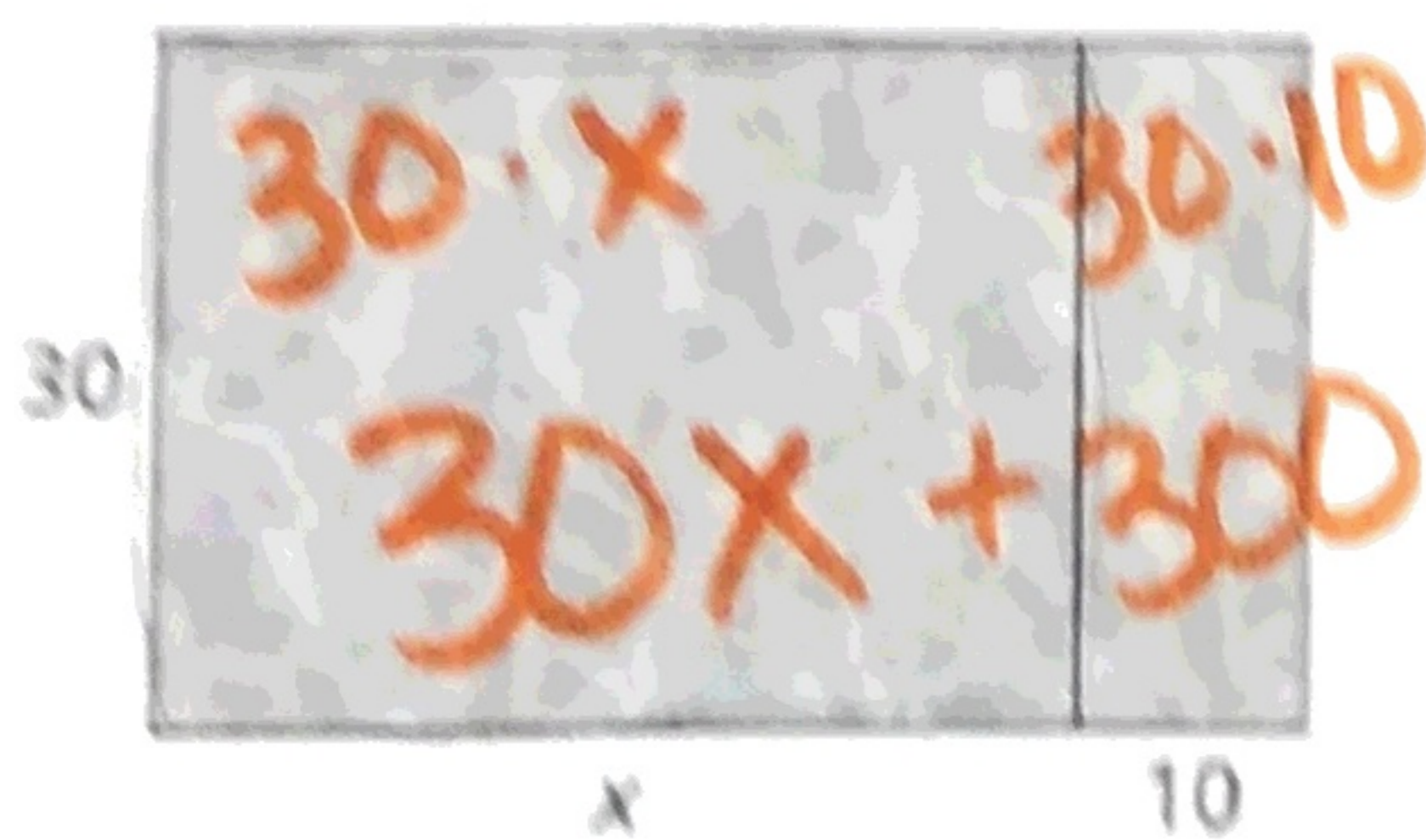
Area =

$$25x + x^2$$

Problem you just did:

$$x(25 + x)$$

Pool 2



Area =

$$30x + 300$$

Problem you just did:

$$30(x + 10)$$

Pool 4



Area =

$$ab + ac$$

Problem you just did:

$$a(b + c)$$

The distributive property says for all real numbers a, b, and c,

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

$a(b + c)$ is called factored form $ab + ac$ is called expanded form

C. Use the Distributive Property to write each expression in expanded form.

1. $3(x + 5)$ $3(x) + 3(5)$
 $3x + 15$

2. $2(3x^2 - 10)$ $2(3x^2) + 2(-10)$
 $6x^2 - 20$

$$* 3. \quad 2x(x + 5) \quad \frac{2x(x) + 2x(5)}{2x^2 + 10x}$$

$$4. \quad -6(4 - 2x) \quad \frac{-6(4) - 6(-2x)}{-24 + 12x}$$

$$5. \quad -2(4x - 5) \quad \frac{-2(4x) - 2(-5)}{-8x + 10}$$

$$*6. \quad -4x(6 - 2x^3) \quad \frac{-4x(6) - 4x(-2x^3)}{-24x + 8x^4}$$

$$7. \quad 6(x + 3) - 2x \quad \frac{6(x) + 6(3) - 2x}{(6x) + 18 - 2x}$$

$$\frac{4x + 18}{4x + 18}$$

$$8. \quad 5 + 2(x - 4) \quad \frac{5 + 2(x) + 2(-4)}{(5) + 2x - 8}$$

$$\frac{2x - 3}{2x - 3}$$

D. Solve the following equations for x.

$$1. \quad 3(x + 5) = 9$$

$$x = -2$$

$$2. \quad 5 - 6(x + 4) = 10$$

$$3. \quad -4 = 3(x + 4)$$

$$3(x) + 3(5) = 9$$

$$5 - 6(x) - 6(4) = 10$$

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

$$3x + 15 = 9$$

$$5 - 6x - 24 = 10$$

$$-4 = 3x + 12$$

$$\frac{-15}{-15} \quad \frac{-15}{-15}$$

$$-6x - 19 = 10$$

$$\frac{-6}{-6} \quad \frac{-6}{-6} \quad -4 = 3x + 12$$

$$\frac{3x}{3} = \frac{-6}{3}$$

$$\frac{-6x}{-6} = \frac{29}{-6}$$

$$\frac{-12}{-12} \quad \frac{-12}{-12} \quad -16 = 3x$$

$$x = \frac{-16}{3}$$

$$4. \quad -10 = \frac{x-3}{7}$$

$$5. \quad 15 = 2\left(\frac{2}{3} + x\right)$$

$$6. \quad 4(x + 5) = k$$

*Note: Remember parentheses are a grouping symbol, so it is possible to get rid of them last rather than distributing first if you truly understand what you are doing. Sometimes doing that is easiest (#1) and other times it makes it more difficult (#3)

In fractions, numerators are a grouping symbol so we eliminate the fraction (division) first.

You should remember from 6th and 7th grade the opposite of distribution: factoring.

$$3x + 12$$

$$5x - 30$$

$$9x - 24$$

$$3x^2 + 30x$$

$$3 \cdot x + 3 \cdot 4$$

$$3(x + 4)$$