



Virtual Learning

# Essential Math 4

## Unit 11

Lesson 5: Area Models

May 20, 2020



**Essentials Math 4**  
**Lesson 5: May 20, 2020**

**Learning Target:**  
**I can use area models to help write equations.**



## Essential Math 4

You will explore the use of multiplication and its relationship to exponents.

### Directions:

1. Click through the slides.
2. Watch all videos on slides.
3. Do what each slide asks on a separate sheet of paper.



## Essential Math 4

**Bell Work:**  
**May 20, 2020**

- ②④ Maria has 5 courses in her class schedule: math, painting, English, science, and geography.
- » Painting is directly between science and geography.
  - » English is not first or last.
  - » Geography is last.

What is the order of Maria's classes?



## Essential Math 4

Bell Work **Key**  
May 20, 2020

Geography is last, and painting is before it, and science is before painting. English must be second.

(1) Math (2) English (3) Science  
(4) Painting (5) Geography

## Practice Problems: Unit 11 Lesson 5 page 23, # A-C

Use each area model to write *three* equations: one using multiplication and two using division.

(A)

$3k^9$	
$5k^2$	$15k^{11}$

(B)

$u^{-5}$	
$u^{-3}$	$u^{-8}$

(C)

$6n$	$-7n^{-1}$	
$n^4$	$6n^5$	$-7n^3$

**Answer Key:** After completing the problems, check your answers for page 23 here.

Use each area model to write *three* equations: one using multiplication and two using division.

(A)

$5k^2$	$3k^9$
$15k^{11}$	

$$5k^2 \cdot 3k^9 = 15k^{11}$$

$$\frac{15k^{11}}{5k^2} = 3k^9$$

$$\frac{15k^{11}}{3k^9} = 5k^2$$

(B)

$u^{-3}$	$u^{-5}$
$u^{-8}$	

$$u^{-3} \cdot u^{-5} = u^{-8}$$

$$\frac{u^{-8}}{u^{-3}} = u^{-5}$$

$$\frac{u^{-8}}{u^{-5}} = u^{-3}$$

(C)

$n^4$	$6n$	$-7n^{-1}$
$6n^5$	$-7n^3$	

$$n^4(6n - 7n^{-1}) = 6n^5 - 7n^3$$

$$\frac{6n^5 - 7n^3}{n^4} = 6n - 7n^{-1}$$

$$\frac{6n^5 - 7n^3}{6n - 7n^{-1}} = n^4$$

**Practice Problems:** Unit 11 Lesson 5      page 23, # D-E

Use the area model to answer the multiplication or division problem.

Ⓓ  $(a^7 + 3a^4)(a^5 - 9) =$

Ⓔ  $\frac{45x^{10} + 72x^6}{9x^2} =$



# Essential Math 4

**Answer Key:** After completing the problems, check your answers for page 23 here.

Use the area model to answer the multiplication or division problem.

Ⓓ  $(a^7 + 3a^4)(a^5 - 9) = \underline{a^{12} + 3a^9 - 9a^7 - 27a^4}$

	<u><math>a^7</math></u>	<u><math>3a^4</math></u>
<u><math>a^5</math></u>	$a^{12}$	$3a^9$
<u><math>-9</math></u>	$-9a^7$	$-27a^4$

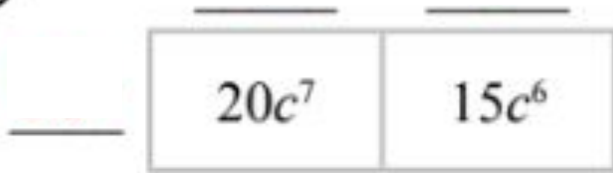
Ⓔ  $\frac{45x^{10} + 72x^6}{9x^2} = \underline{5x^8 + 8x^4}$

	<u><math>5x^8</math></u>	<u><math>8x^4</math></u>
<u><math>9x^2</math></u>	$45x^{10}$	$72x^6$

Practice Problems: Unit 11 Lesson 5 page 23, # F-G

Use the area model to answer the multiplication or division problem.

Ⓕ



Ⓖ



**Answer Key:** After completing the problems, check your answers for page 23 here.

Complete the area model and write an equation. Multiple ways of factoring *may* be possible. Find one.

Ⓕ

$4c$	$3$
$20c^7$	$15c^6$

$5c^6$

Other common factors include  $5c^5$ ,  $5c^4$ ,  $c^3$ ,  $5$ ,  $c$ , etc.

$$20c^7 + 15c^6 = 5c^6(4c + 3)$$

Ⓖ

$p^3$	$10p^2$	$6$
$3p^8$	$30p^7$	$18p^5$

$3p^5$

Other common factors:  $3p^4$ ,  $3p^3$ ,  $p^2$ ,  $3$ , etc.

$$3p^8 + 30p^7 + 18p^5 = 3p^5(p^3 + 10p^2 + 6)$$

# Essential Math 4

Practice Problems: Unit 11 Lesson 5 page 23, # H-I

$w^6$	$5w^3$
$4w^3$	$20$

$m^{10}$	$-10m^5$
$3m^5$	$-30$

$$w^6 + 9w^3 + 20 =$$

# Essential Math 4

## Answer Key:

After completing the problems, check your answers for page 23 here.

Ⓗ

	<u><math>w^3</math></u>	<u>5</u>
<u><math>w^3</math></u>	$w^6$	$5w^3$
<u>4</u>	$4w^3$	20

$$w^6 + 9w^3 + 20 = (w^3 + 4)(w^3 + 5)$$

Ⓘ

	<u><math>m^5</math></u>	<u>-10</u>
<u><math>m^5</math></u>	$m^{10}$	$-10m^5$
<u>3</u>	$3m^5$	-30

$$m^{10} - 7m^5 - 30 = (m^5 - 10)(m^5 + 3)$$

# Essential Math 4

Practice Problems: Unit 11 Lesson 5 page 23, # J-K

	$w^4$	$-6w^2$
		$36$

	$n^{12}$	
		$11n^{12}$
		$22$

**Answer Key:** After completing the problems, check your answers for page 23 here.

ⓐ

	<u><math>w^2</math></u>	<u><math>-6</math></u>
<u><math>w^2</math></u>	$w^4$	$-6w^2$
<u><math>-6</math></u>	$-6w^2$	$36$

$$w^4 - 12w^2 + 36 = (w^2 - 6)^2$$

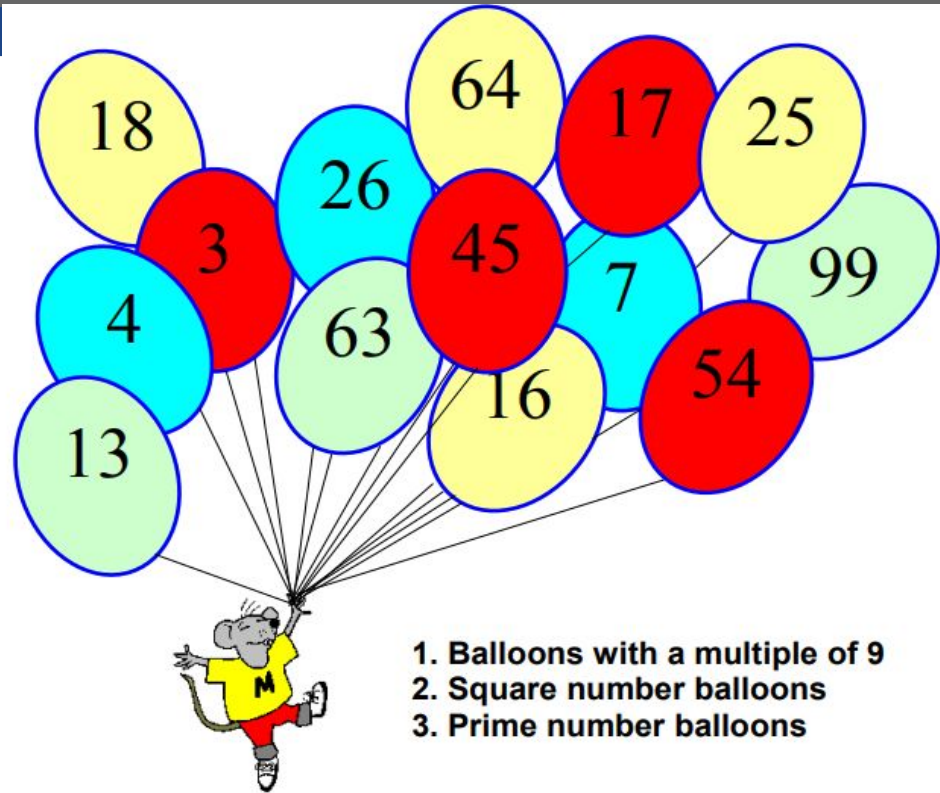
ⓑ

	<u><math>n^{12}</math></u>	<u><math>11</math></u>
<u><math>n^{12}</math></u>	$n^{24}$	$11n^{12}$
<u><math>2</math></u>	$2n^{12}$	$22$

$$n^{24} + 13n^{12} + 22 = (n^{12} + 2)(n^{12} + 11)$$

## Fun Stuff:

If a number in one of the balloons is included in the answers to the four problems below the balloons, then that balloon will fly away.



**WHICH BALLOON IS LEFT?**





## Essential Math 4

Fun Stuff **Answer:** 26



# Essential Math 4

Resources were developed at EDC (Education Development Center, Inc).  
EDC owns the copyright © 2011-2019

