

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## EVERYDAY MATHEMATICS—3<sup>rd</sup> Grade

### Unit 9 Review: Multidigit Operations

1) For each number sentence, fill in the blank with a factor from 1 to 10 to make it true.

a.  $4 \times 8 > 8 \times$  \_\_\_\_\_

b.  $6 \times 7 < 6 \times$  \_\_\_\_\_

c.  $9 \times 3 < \text{_____} \times \text{_____}$

For problems 2-4, write a number model with a letter for the unknown. Then solve the problem and write the answer. Write your number model again with the answer to check that your answer makes sense.

2) Six robins each have a mass of about 70 grams.  
What is their total mass?

\_\_\_\_\_

(number model with letter)

The letter \_\_\_\_\_ stands for \_\_\_\_\_.

Six robins have a total mass of about \_\_\_\_\_ grams.

\_\_\_\_\_

(number model with answer)

## Unit 9 Review (continued)

3) Together, 40 bald eagles have a mass of about 240 kilograms.

One wild turkey has a mass of about 6 kilograms. About how many 6-pound wild turkeys would it take to equal the mass of the group of bald eagles?

\_\_\_\_\_

(number model with letter)

The letter \_\_\_\_\_ stands for \_\_\_\_\_.

It would take \_\_\_\_\_ wild turkeys to equal the mass of 40 bald eagles.

\_\_\_\_\_

(number model with answer)

4) About how many 50-gram parrots have a mass equal to one 1,000 pound pheasant?

\_\_\_\_\_

(number model with letter)

The letter \_\_\_\_\_ stands for \_\_\_\_\_.

It would take \_\_\_\_\_ parrots to equal the mass of one pheasant.

\_\_\_\_\_

(number model with answer)

## Unit 9 Review (continued)

- 5) Use the break-apart strategy to solve each problem.  
You may use mental math, drawings, number sentences, or words.  
Show your thinking.

a.  $6 \times 73 =$  \_\_\_\_\_

b.  $4 \times 82 =$  \_\_\_\_\_

### Unit 9 Review (continued)

c. Eduardo drew a rectangle to help solve  $7 \times 56$ . Here is his work:

		$56$	
	$50$	$6$	
$7$	$7 \times 50 = 350$	$7 \times 6 = 42$	$\begin{array}{r} 350 \\ + 42 \\ \hline 392 \end{array}$

Explain how Eduardo solved the problem.

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## Unit 9 Review (continued)

6) It started snowing at 10:20 A.M. and stopped at 12:45 P.M.

How long did it snow?

Show your thinking. You may use an open number line, your toolkit clock, or other representations.

\_\_\_\_\_ hours \_\_\_\_\_ minutes

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## EVERYDAY MATHEMATICS—3<sup>rd</sup> Grade

### Unit 9 Challenge Review

- 1) About how many 10-gram canaries would equal the mass of seven 30-gram chipmunks?  
Explain your thinking using numbers and words.

About \_\_\_\_\_ canaries equal the mass of 7 chipmunks.

- 2) Quinn used the break-apart strategy to solve  $7 \times 83$ , but he made a mistake.  
Explain Quinn's mistake.

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	$83$		
	$80$	$3$	
$7$	$7 \times 8 = 56$	$7 \times 3 = 21$	$\begin{array}{r} 56 \\ + 21 \\ \hline 77 \end{array}$

Use any strategy to correctly solve  $7 \times 83$ . Show your work.

$7 \times 83 =$  \_\_\_\_\_

## Unit 9 Challenge Review (continued)

3) Use the sunrise and sunset information in the chart to figure out the length of day for each city.

City	Sunrise on 4/14/2016	Sunset on 4/14/2016	Length of Day on 4/14/2016
New York City, New York	6:18 A.M.	7:34 P.M.	
Los Angeles, California	6:23 A.M.	7:23 P.M.	

What is the difference between the lengths of day for the two cities?

\_\_\_\_\_

Name: \_\_\_\_\_ Date: \_\_\_\_\_

**EVERYDAY MATHEMATICS—3<sup>rd</sup> Grade**  
**Unit 9 Open Response Review**  
*Factor Patterns*

- 1) Explore what happens to the product when you double a factor. For example, multiply  $2 \times 3$ . Then double the 2 and multiply  $4 \times 3$ . Then begin with  $2 \times 3$  again, double the 3, and multiply  $2 \times 6$ . Show your work.
- 2) Try doubling one of the factors in other multiplication facts. Show your work. Describe a pattern that you see when you double a factor.
- 3) Based on your work with doubling factors, predict what will happen when you triple a factor. Explain how you would convince someone that your prediction will always work for any multiplication fact.

Remember...  
double =  $\times 2$       triple =  $\times 3$



## EVERYDAY MATHEMATICS—3<sup>rd</sup> Grade

### Unit 9 Review: Multidigit Operations

1) For each number sentence, fill in the blank with a factor from 1 to 10 to make it true.

Possible answers:

a.  $4 \times 8 > 8 \times$  1, 2, or 3

Possible answers:

b.  $6 \times 7 < 6 \times$  8, 9, or 10

Possible answers:

9 X 2; 9 X 1

8 X 3; 8 X 2; 8 X 1

7 X 4; 7 X 3; 7 X 2; 7 X 1

6 X 4; 6 X 3; 6 X 2; 6 X 1

5 X 5; 5 X 4; 5 X 3; 5 X 2; 5 X 1

4 X 4; 4 X 3; 4 X 2; 4 X 1

3 X 1; 3 X 2; 3 X 3

2 X 2; 2 X 1

c.  $9 \times 3 < \underline{\hspace{2cm}} \times \underline{\hspace{2cm}}$

For problems 2-4, write a number model with a letter for the unknown. Then solve the problem and write the answer. Write your number model again with the answer to check that your answer makes sense.

2) Six robins each have a mass of about 70 grams.  
What is their total mass?

$$\underline{6 \times 70 = M}$$

(number model with letter)

The letter M stands for the mass of 6 robins.

Six robins have a total mass of about 420 grams.

$$\underline{6 \times 70 = 420}$$

(number model with answer)

## Unit 9 Review (continued) \*ANSWER KEY\*

- 3) Together, 40 bald eagles have a mass of about 240 kilograms.  
One wild turkey has a mass of about 6 kilograms. About how many 6-pound wild turkeys would it take to equal the mass of the group of bald eagles?

$$\underline{T \times 6 = 240 \text{ or } 240 \div 6 = T}$$

(number model with letter)

The letter T stands for the number of wild turkeys.

It would take 40 wild turkeys to equal the mass of 40 bald eagles.

$$\underline{40 \times 6 = 240 \text{ or } 240 \div 6 = 40}$$

(number model with answer)

- 4) About how many 50-gram parrots have a mass equal to one 1,000 pound pheasant?

$$\underline{50 \times P = 1,000 \text{ or } 1,000 \div 50 = P}$$

(number model with letter)

The letter P stands for the number of pheasants.

It would take 20 parrots to equal the mass of one pheasant.

$$\underline{50 \times 20 = 1,000 \text{ or } 1,000 \div 50 = 20}$$

(number model with answer)

**Unit 9 Review (continued) \*ANSWER KEY\***

5) Use the break-apart strategy to solve each problem.  
You may use mental math, drawings, number sentences, or words.  
Show your thinking.

a.  $6 \times 73 = \underline{\quad 438 \quad}$

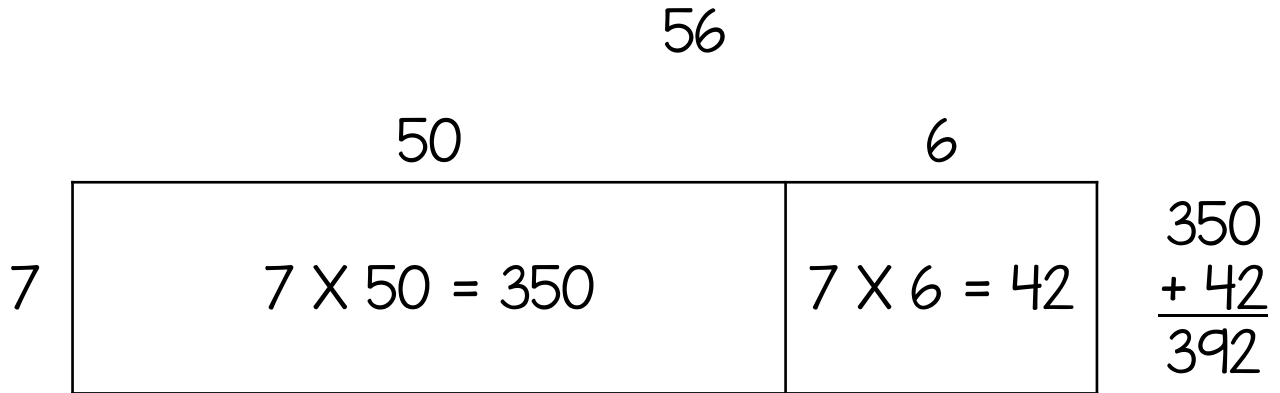
	$73$		
	$70$	$3$	
$6$	$6 \times 70 = 420$	$6 \times 3 = 18$	$420$ $+ 18$ <hr/> $438$

b.  $4 \times 82 = \underline{\quad 328 \quad}$

	$82$		
	$80$	$2$	
$4$	$4 \times 80 = 320$	$4 \times 2 = 8$	$320$ $+ 8$ <hr/> $328$

**Unit 9 Review (continued) \*ANSWER KEY\***

c. Eduardo drew a rectangle to help solve  $7 \times 56$ . Here is his work:



Explain how Eduardo solved the problem.

Possible answer: He broke 56 into 50 and 6. Then he multiplied  $50 \times 7$  and  $6 \times 7$ . He added the two products together to get 392, so  $7 \times 56 = 392$ .

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## Unit 9 Review (continued) \*ANSWER KEY\*

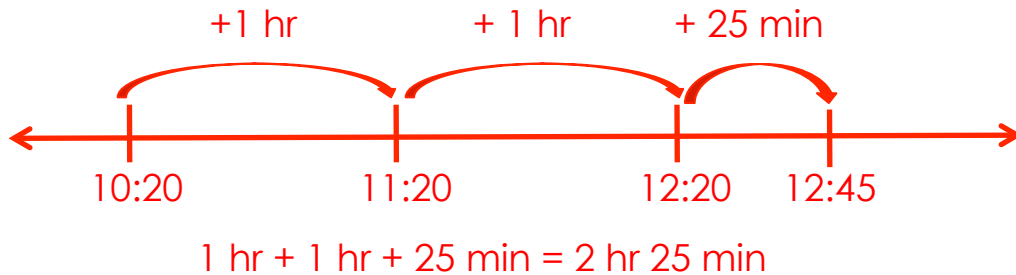
6) It started snowing at 10:20 A.M. and stopped at 12:45 P.M.

How long did it snow?

Show your thinking. You may use an open number line, your toolkit clock, or other representations.

Strategies will vary.

Possible answer:



2 hours 20 minutes

## EVERYDAY MATHEMATICS—3<sup>rd</sup> Grade Unit 9 Challenge Review

- 1) About how many 10-gram canaries would equal the mass of seven 30-gram chipmunks?  
Explain your thinking using numbers and words.

Possible answer: I multiplied  $7 \times 30$  and got 210, so I knew the mass of 7 chipmunks. Then I had to figure out how many 10s are in 210, so I thought 10 times what is 210 and knew the answer was 21

About 21 canaries equal the mass of 7 chipmunks.

- 2) Quinn used the break-apart strategy to solve  $7 \times 83$ , but he made a mistake. Explain Quinn's mistake.

Possible answer: Quinn multiplied the basic fact  $7 \times 8$  instead of the extended fact  $7 \times 80$ . He should have multiplied  $7 \times 80$ , which is 560.

83		
	80	3
7	$7 \times 8 = 56$	$7 \times 3 = 21$
		$\begin{array}{r} 56 \\ + 21 \\ \hline 77 \end{array}$

Use any strategy to correctly solve  $7 \times 83$ . Show your work.

83		
	80	3
7	$7 \times 80 = 560$	$7 \times 3 = 21$
		$\begin{array}{r} 560 \\ + 21 \\ \hline 581 \end{array}$

$7 \times 83 = \underline{581}$

**Unit 9 Challenge Review (continued)** \*ANSWER KEY\*

3) Use the sunrise and sunset information in the chart to figure out the length of day for each city.

City	Sunrise on 4/14/2016	Sunset on 4/14/2016	Length of Day on 4/14/2016
New York City, New York	6:18 A.M.	7:34 P.M.	13 hours 16 minutes
Los Angeles, California	6:23 A.M.	7:23 P.M.	13 hours

What is the difference between the lengths of day for the two cities?

16 minutes

**EVERYDAY MATHEMATICS—3<sup>rd</sup> Grade**  
**Unit 9 Open Response Review**  
*Factor Patterns*

- 1) Explore what happens to the product when you double a factor. For example, multiply  $2 \times 3$ . Then double the 2 and multiply  $4 \times 3$ . Then begin with  $2 \times 3$  again, double the 3, and multiply  $2 \times 6$ . Show your work.

$2 \times 3 = 6$

$2 \times 3 = 6$

$4 \times 3 = 12$

$2 \times 6 = 12$

When you double a factor, the product doubles too. 12 is twice as much as 6.

- 2) Try doubling one of the factors in other multiplication facts. Show your work. Describe a pattern that you see when you double a factor.

$2 \times 4 = 8$

$2 \times 4 = 8$

Like the last example, when you double a factor, the product doubles.

$4 \times 4 = 16$

$2 \times 8 = 16$

$3 \times 5 = 15$

$3 \times 5 = 15$

$6 \times 5 = 30$

$3 \times 10 = 30$

- 3) Based on your work with doubling factors, predict what will happen when you triple a factor. Explain how you would convince someone that your prediction will always work for any multiplication fact.

I predict that the product will triple when you triple a factor. I would convince someone that my prediction is true by showing them these examples. 18 is three times as much as 6, or triple. I tripled both factors and the product tripled.

$2 \times 3 = 6$

$2 \times 3 = 6$

$6 \times 3 = 18$

$2 \times 9 = 18$

Remember...  
double =  $\times 2$       triple =  $\times 3$