Name _____

Multiplication Match-Up

Match each word problem to a model. Write the equation and solve.

1. Angie has 36 coins. This is 4 times as many coins as Scott has. How many coins does Scott have?

C; $36 = 4 \times n$; $n = 9$

2. Cindy bought 20 stamps. This is 5 times the number of postcards that Yoshi bought. How many postcards did Yoshi buy?

D; $20 = 5 \times n$; $n = 4$

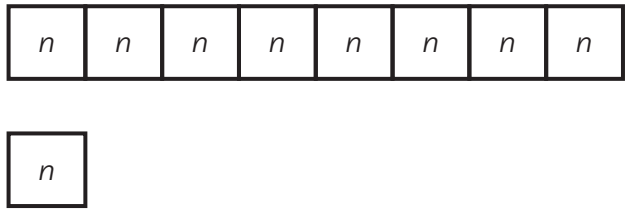
3. Jessica has 48 stickers. This is 8 times as many stickers as Taylor has. How many stickers does Taylor have?

A; $48 = 8 \times n$; $n = 6$

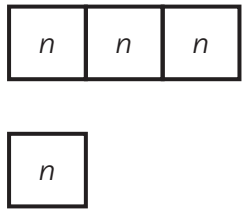
4. Joshua picked 24 apples. This is 3 times the number of apples that Carly picked. How many apples did Carly pick?

B; $24 = 3 \times n$; $n = 8$

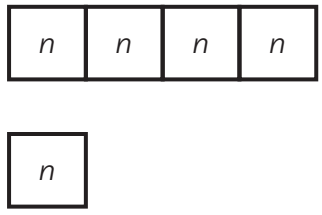
A.



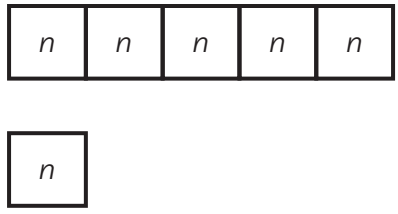
B.



C.



D.



5. Stretch Your Thinking Write four comparison sentences for the product 12.

Possible answer: 2 times as many as 6 is 12; 6 times as many as 2 is 12; 12 is 3 times as many as 4; 12 is 4 times as many as 3.

Name _____

Mixed Models

Solve each problem.

1. Together, Tom and Max have 72 football cards. Tom has 2 more than 4 times as many cards as Max has. How many football cards does Tom have?

58 football cards

2. Naomi has 50 red beads and white beads. The number of red beads is 1 more than 6 times the number of white beads. How many red beads does Naomi have?

43 red beads

3. Javier rode his bike for a total of 41 minutes. Before lunch, he rode for 1 minute less than 5 times the number of minutes he rode after lunch. How many minutes did Javier ride before lunch?

34 minutes

4. Marnie practiced her basketball dribbling. After two tries, she had bounced the ball 88 times. On the second try, she had 2 fewer bounces than 8 times the number of bounces she had on the first try. How many bounces did she have on the second try?

78 bounces

5. Write Math How can a multiplication model help you solve Problem 1?

Possible answer: draw one box with *n* in it for Max. Draw 4 boxes with *n* in each for Tom, and write "+ 2" to the right of the boxes. Write 72 for the total number of cards.

Name _____

Multiplication Inequalities

Write <, >, or = for each ◯.

1. $7 \times 60 \bigcirc 400$ → $7 \times 60 > 400$

2. $700 \bigcirc 90 \times 8$ → $700 < 90 \times 8$

3. $3 \times 800 \bigcirc 2{,}500$ → $3 \times 800 < 2{,}500$

4. $2{,}000 \bigcirc 400 \times 5$ → $2{,}000 = 400 \times 5$

5. $8 \times 6{,}000 \bigcirc 40{,}000$ → $8 \times 6{,}000 > 40{,}000$

6. $3 \times 9{,}000 \bigcirc 39{,}000$ → $3 \times 9{,}000 < 39{,}000$

7. $6 \times 900 \bigcirc 700 \times 8$ → $6 \times 900 < 700 \times 8$

8. $8 \times 3{,}000 \bigcirc 6{,}000 \times 4$ → $8 \times 3{,}000 = 6{,}000 \times 4$

9. $9 \times 4{,}000 \bigcirc 6{,}000 \times 6$ → $9 \times 4{,}000 = 6{,}000 \times 6$

10. $800 \times 9 \bigcirc 3{,}000 \times 3$ → $800 \times 9 < 3{,}000 \times 3$

11. Write Math **Explain** how you found the answer in Exercise 10.

Possible answer: I used the basic fact $8 \times 9 = 72$ and a pattern to find $800 \times 9 = 7{,}200$. I used the basic fact $3 \times 3 = 9$ and a pattern to find $3{,}000 \times 3 = 9{,}000$. Then I compared 7,200 and 9,000. Since 9,000 has the greater digit in the thousands place, 7,200 is less than 9,000.

Name _____

Find the Unknown Factors

Choose two factors from the box to make the estimated product.
You may use the factors more than once.

3	5	624
9	126	957

1. 1,800 3 × 624
2. 500 5 × 126
3. 5,000 5 × 957
4. 900 9 × 126

8	7	435
6	899	273

5. 1,800 6 × 273
6. 6,300 7 × 899
7. 3,200 8 × 435
8. 2,100 7 × 273

5	6,149	3,044
2	3	8,756

9. 30,000 5 × 6,149
10. 6,000 2 × 3,044
11. 9,000 3 × 3,044
12. 45,000 5 × 8,756

13. **Stretch Your Thinking** Two factors have an estimated product of 10,000. One of these factors is a single digit. What two factors could they be? **Explain** your thinking.

Possible answers: 5 × 1,951, 2 × 5,328, 1 × 9,845; they can be any two factors that round to 5 × 2,000, 2 × 5,000, or 1 × 10,000 so the estimated product equals 10,000.

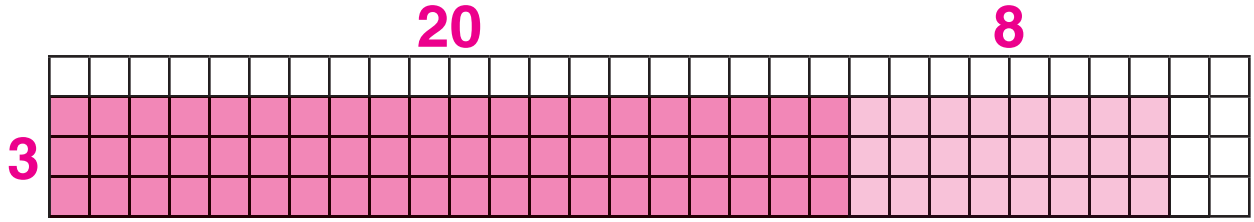
Name _____

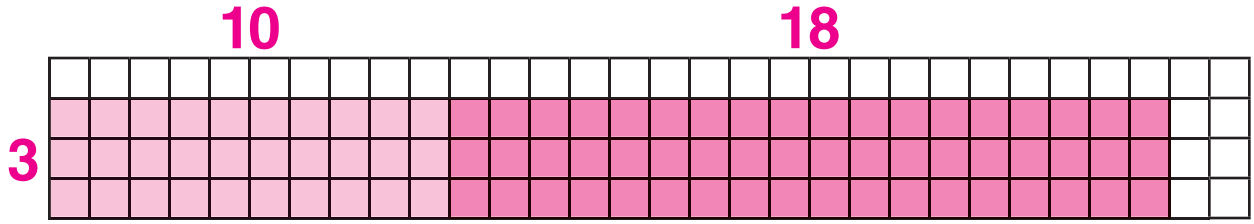
Shading the Grids

Use the Distributive Property. Shade and label each grid.

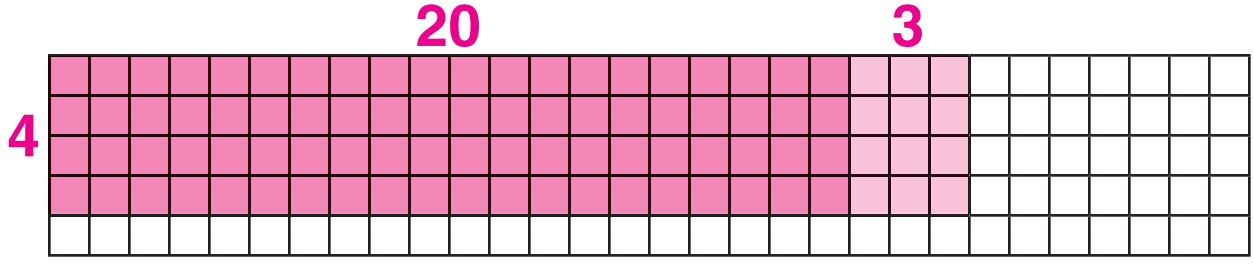
Models will vary. Possible models are given.

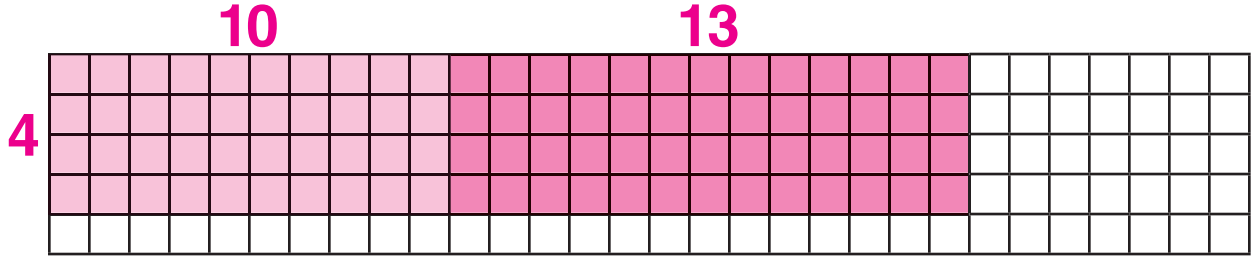
1. Show 3×28 in two different ways.





2. Show 4×23 in two different ways.





3. **Stretch Your Thinking** Find the partial products for one of your grids in Exercise 1. Then use the Distributive Property to find the product 3×28.

Possible answer: $3 \times 20 = 60$; $3 \times 8 = 24$; using the Distributive Property, $3 \times 28 = (3 \times 20) + (3 \times 8)$; so, $3 \times 28 = 60 + 24$, or 84.

Name _____

Expanded Form Match-Up

Write the multiplication expression for each expanded form. Then match the multiplication expression with its product.

1. $(7 \times 900) + (7 \times 80) + (7 \times 7)$

7 × 987; D

2. $(3 \times 5{,}000) + (3 \times 40) + (3 \times 8)$

3 × 5,048; A

3. $(8 \times 900) + (8 \times 2)$

8 × 902; H

4. $(4 \times 3{,}000) + (4 \times 900) + (4 \times 60) + (4 \times 2)$

4 × 3,962; F

5. $(2 \times 7{,}000) + (2 \times 800) + (2 \times 6)$

2 × 7,806; I

6. $(9 \times 700) + (9 \times 80) + (9 \times 5)$

9 × 785; B

A. 15,144

B. 7,065

C. 15,720

D. 6,909

E. 16,224

F. 15,848

G. 7,360

H. 7,216

I. 15,612

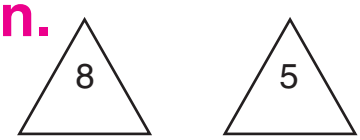
J. 14,172

Name _____

Shaping Factors

Choose one number from a circle and another number from a triangle. Then use these two numbers to write a number sentence that is true. You can use numbers more than once.

Possible answers are given.

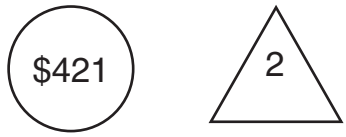


1. Find the least product.

$2 \times 120 = 240$

2. Find the greatest product.

$9 \times \$583 = \$5,247$

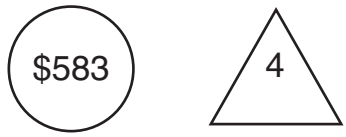


3. Find the product closest to 1,050.

$7 \times 149 = 1,043$

4. Find a product with an 8 in the ones place.

$8 \times \$421 = \$3,368$

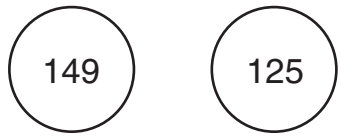


5. Find the greatest product ending in 25.

$9 \times 125 = 1,125$

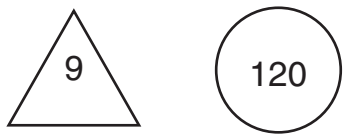
6. Find a product between 1,500 and 1,700.

$4 \times \$421 = \$1,684$



7. Find a product that contains only the digits 2 and 9.

$8 \times \$374 = \$2,992$

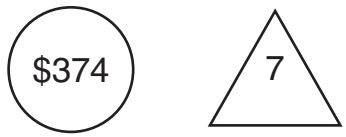


8. Find the product with three zeros.

$8 \times 125 = 1,000$

9. Find the product closest to 500.

$4 \times 125 = 500$



10. Find the product closest to 2,000.

$5 \times \$421 = \$2,105$

Name _____

Multiply by 11 Mentally

To find the product of a two-digit number and 11, add the digits in the two-digit number and write the sum between the two digits. If the sum is greater than 9, write the *last* digit of the sum between the two digits. Then add 1 to the *first* digit.

Example 1: Multiply 25 × 11. Add the digits in 25: 2 + 5 = 7 Place the sum, 7, between 2 and 5. So, 25 × 11 = 275.	**Example 2:** Multiply 59 × 11. Add the digits in 59: 5 + 9 = 14 Place the last digit, 4, between 5 and 9. Add 1 to the first digit: 5 + 1 = 6 So, 59 × 11 = 649.

Find the product.

1. 17 × 11

187

2. 32 × 11

352

3. 45 × 11

495

4. 39 × 11

429

5. 67 × 11

737

6. 89 × 11

979

7. Stretch Your Thinking Find a way to multiply 354 × 11 mentally. Describe your method and show that it works.

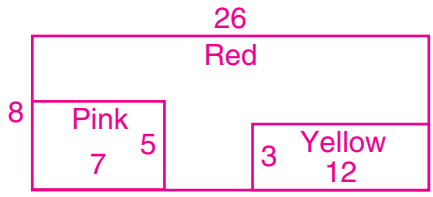
Possible answer: write the first number, 3, as the thousands digit. Use the sum of the first two digits, 3 + 5 = 8, as the hundreds digit. Use the sum of the last two digits, 5 + 4 = 9, as the tens digit. Use the last number, 4, as the ones digit. 354 × 11 = 3,894

Name _____

2-Digit Roses

Draw a diagram to solve the problem.

A rose garden has 8 rows of 26 rose bushes each. In each of the first 5 rows, 7 bushes have pink roses. In each of the first 3 rows, 12 bushes have yellow roses. The rest of the bushes have red roses. How many bushes have red roses?

Read the Problem	Solve the Problem
What do I need to find? I need to find the number of bushes with **red** roses.	**Draw a diagram and do your work here.** 
What information do I need to use? In the entire garden, there are **8** rows with **26** bushes in each row. There are **5** rows with **7** pink bushes in each row. There are **3** rows with **12** yellow bushes in each row.	I found the total number of rose bushes. **$8 \times 26 = 208$** I found the number of pink rose bushes. **$5 \times 7 = 35$** I found the number of yellow rose bushes. **$3 \times 12 = 36$**
How will I use the information? I can **multiply** to find the total number of bushes, the number of pink rose bushes, and the number of yellow rose bushes.	

1. What else do you need to do to solve the problem?

   Add the number of pink rose bushes and the number of yellow rose bushes. Subtract the sum from the total number of bushes to find the number of red rose bushes. $208 - (35 + 36) = 137$

2. **Stretch Your Thinking** Give at least two reasons why drawing a diagram is helpful when solving a problem.

   Possible answer: a diagram helps me visualize the problem. I can also put a check mark next to each equation after I solve it to help me keep track of my work.

Name _____

Regrouping Review

Each multiplication problem below was solved using partial products. Some errors were made. Multiply using regrouping to check each answer. Describe any errors that you find.

1. Partial product	Regrouping	**2.** Partial product	Regrouping
72 × 8 26 + 560 586	1 72 × 8 576	65 × 9 54 + 540 594	4 65 × 9 585
Did you find any errors? If so, describe. When the ones were multiplied, 8 × 2 was recorded as 26 ones or 2 tens 6 ones instead of 16 ones or 1 ten 6 ones.		Did you find any errors? If so, describe. When the ones were multiplied, the same fact used for tens was used to record the ones.	
3. Partial product	Regrouping	**4.** Partial product	Regrouping
36 × 5 11 + 150 161	3 36 × 5 180	47 × 4 28 + 16 44	2 47 × 4 188
Did you find any errors? If so, describe. The sum of the ones was recorded instead of the product of the ones.		Did you find any errors? If so, describe. The product of the tens was recorded as ones instead of as tens.	

5. **Stretch Your Thinking** Compare the factors and the product in Exercise 4. What information does this give you?

Possible explanation: the product is less than 47, so there is an error.

6. Write Math **Explain** how you can use partial products to check products you found with regrouping.

By using partial products to check the product, you can make sure you regrouped the ones correctly.

Name _____

Multiplication Mystery

There's something mysterious in the water off the coast of Florida. To discover what it is, find the products and use the decoder below. The first letter has been done for you.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z

1. Letter 1: $2 \times 6{,}532$

Answer: 13,064

Code: Use the ten thousands digit and the thousands digit.

13 **Letter:** M

2. Letter 2: 5×245

Answer: 1,225

Code: Use the thousands digit.

1 **Letter:** A

3. Letter 3: $3 \times 4{,}893$

Answer: 14,679

Code: Use the ten thousands digit and the thousands digit.

14 **Letter:** N

4. Letter 4: 7×198

Answer: 1,386

Code: Use the thousands digit.

1 **Letter:** A

5. Letter 5: $6 \times 3{,}411$

Answer: 20,466

Code: Use the ten thousands digit and the thousands digit.

20 **Letter:** T

6. Letter 6: 4×129

Answer: 516

Code: Use the hundreds digit.

5 **Letter:** E

7. Letter 7: 8×730

Answer: 5,840

Code: Use the thousands digit.

5 **Letter:** E

IT'S A M A N A T E E !

8. The product of 5 and another number has the code for E in its ones place. What digit could be in the ones place of the other number? **Explain**.

Since the code for E is 5, the product of 5 and the digit in the ones place must end in 5. So, the digit is 1, 3, 5, 7, or 9.

9. Write Math Is the product of a 4-digit number and a 1-digit number always a 5-digit number? **Explain**.

Possible answer: No. For example, in $4{,}000 \times 1 = 4{,}000$, the product is not a 5-digit number.

Name _____

Same Answer Multistep

Find the value of *n* for each exercise. Then identify the exercises that have the same answer.

1. $6 \times 36 + 3 \times 37 + 57 = n$

384 $= n$

2. $8 \times 47 + 2 \times 29 - 80 = n$

354 $= n$

3. $7 \times 45 + 4 \times 19 - 17 = n$

374 $= n$

4. $7 \times 56 + 2 \times 12 - 52 = n$

364 $= n$

5. $5 \times 52 + 6 \times 12 + 42 = n$

374 $= n$

6. $9 \times 32 + 4 \times 28 - 16 = n$

384 $= n$

7. $4 \times 46 + 3 \times 61 + 17 = n$

384 $= n$

8. $9 \times 39 + 2 \times 19 - 15 = n$

374 $= n$

9. $2 \times 98 + 8 \times 16 + 30 = n$

354 $= n$

10. $3 \times 75 + 4 \times 23 + 47 = n$

364 $= n$

11. Which exercise(s) have the same answer as Exercise 1? Exercises 6 and 7

12. Which exercise(s) have the same answer as Exercise 2? Exercise 9

13. Which exercise(s) have the same answer as Exercise 3? Exercises 5 and 8

14. **Stretch Your Thinking** What statement can you make about the equations in Exercise 4 and Exercise 10? **Explain**.

Possible answer: the equations are equal because $n = 364$ in both equations.