

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Solve.

a.  $(12 - 4) + 6 = \overset{8}{14}$

b.  $12 - (4 + 6) = \overset{10}{2}$

c.  $\overset{5}{5} = 15 - (7 + 3)$

d.  $\overset{8}{11} = (15 - 7) + 3$

e.  $\overset{5}{30} = (3 + 2) \times 6$

f.  $\overset{12}{15} = 3 + (2 \times 6)$

g.  $4 \times \overset{5}{(7 - 2)} = \overset{20}{20}$

h.  $\overset{28}{(4 \times 7)} - 2 = \overset{26}{26}$

i.  $\overset{6}{10} = (12 \div 2) + 4$

j.  $\overset{6}{2} = 12 \div (2 + 4)$

k.  $9 + \overset{5}{(15 \div 3)} = \overset{14}{14}$

l.  $\overset{24}{(9 + 15)} \div 3 = \overset{8}{8}$

m.  $60 \div \overset{6}{(10 - 4)} = \overset{10}{10}$

n.  $\overset{6}{(60 \div 10)} - 4 = \overset{2}{2}$

o.  $\overset{2}{37} = 35 + (10 \div 5)$

p.  $\overset{45}{9} = (35 + 10) \div 5$

2. Use parentheses to show the order you would need to do the operations to make the equation true.

a. $\overset{12}{(16 - 4)} + 7 = 19$	b. $16 - \overset{11}{(4 + 7)} = 5$
c. $2 = 22 - \overset{20}{(15 + 5)}$	d. $12 = \overset{7}{(22 - 15)} + 5$
e. $\overset{10}{(3 + 7)} \times 6 = 60$	f. $3 + \overset{42}{(7 \times 6)} = 45$
g. $5 = \overset{1}{(10 \div 10)} \times 5$	h. $50 = \overset{10}{(100 \div 10)} \times 5$
i. $\overset{21}{(26 - 5)} \div 7 = 3$	j. $36 = 4 \times \overset{9}{(25 - 16)}$

3. The teacher writes  $24 \div 4 + 2 = \underline{\quad}$  on the board. Chad says it equals 8. Samir says it equals 4. Explain how placing the ( ) in the equation can make both answers true.

$$(24 \div 4) + 2 = 8, \text{ Chad is correct.}$$

$$24 \div (4 + 2) = 4, \text{ Samir is correct.}$$

4. Natasha solves the equation below by finding the sum of 5 and 12. Place the ( ) around the equation to show her thinking. Then solve.

$$\boxed{\begin{array}{l} (12 + 5) \div 3 = \underline{9} \\ 27 \end{array}}$$

$$27 \div 3 = 9$$

5. Find two possible answers to the expression  $7 + 3 \times 2$  by placing ( ) around different numbers.

$$\begin{array}{l} (7+3) \times 2 \\ 10 \times 2 = 20 \end{array}$$

$$\begin{array}{l} 7 + (3 \times 2) \\ 13 \end{array}$$

Name \_\_\_\_\_

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1. Use parentheses to make the equations true.

a.  $24 = (32 - 14) + 6$

b.  $12 = 32 - (14 + 6)$

c.  $(2 + 8) \times 7 = 70$

d.  $2 + (8 \times 7) = 58$

2. Marcos solves  $24 \div 6 + 2 = \underline{\quad}$ . He says it equals 6. Iris says it equals 3. Show and explain how the position of parentheses in the equation can make both answers true.

Marcos

$$24 \div (6 + 2) =$$

$$24 \div 8 = 3$$

Iris

$$(24 \div 6) + 2$$

$$4 + 2 = 6$$

Both students are correct because if parentheses are placed around the  $(6 + 2)$  the answer is 3, but if the parentheses are placed around the  $(24 \div 6)$  the answer is 6.

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1. Solve.

a.  $9 - (6 + 3) = \underline{0}$

b.  $(9 - 6) + 3 = \underline{6}$

c.  $\underline{8} = 14 - (4 + 2)$

d.  $\underline{12} = (14 - 4) + 2$

e.  $\underline{42} = (4 + 3) \times 6$

f.  $\underline{22} = 4 + (3 \times 6)$

g.  $(18 \div 3) + 6 = \underline{12}$

h.  $18 \div (3 + 6) = \underline{2}$

2. Use parentheses to make the equations true.

a.  $14 - (8 + 2) = 4$

b.  $(14 - 8) + 2 = 8$

c.  $2 + (4 \times 7) = 30$

d.  $(2 + 4) \times 7 = 42$

g.  $12 = (18 \div 3) \times 2$

h.  $3 = 18 \div (3 \times 2)$

e.  $5 = 50 \div (5 \times 2)$

f.  $20 = (50 \div 5) \times 2$

3. Determine if the equation is true or false.

a. $(15 - 3) \div 2 = 6$	Example: True
b. $(10 - 7) \times 6 = 18$	True
c. $(35 - 7) \div 4 = 8$	False
d. $28 = 4 \times (20 - 13)$	True
e. $35 = (22 - 8) \div 5$	False

4. Jerome finds that  $(3 \times 6) \div 2$  and  $18 \div 2$  are equal. Explain why this is true.

because  $(3 \times 6) \div 2$  ends up being  $18 \div 2$  after the parenthesis are calculated first.

5. Place parentheses in the equation below so that you solve by finding the difference between 28 and 3. Find the answer.

$(4 \times 7) - 3 = 25$

6. Johnny says that the answer to  $2 \times 6 \div 3$  is 4 no matter where the parentheses are. Do you agree? Place parentheses around different numbers to show his thinking.

Yes I agree because  $(2 \times 6) \div 3 = 4$ , and  $2 \times (6 \div 3) = 4$ .

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Solve the following pairs of problems. Circle the pairs where both problems have the same answer.

1. a.  $7 + (6 + 4) = 17$   
 b.  $(7 + 6) + 4 = 17$   
 13

5. a.  $(3 + 2) \times 5 = 25$   
 b.  $3 + (2 \times 5) = 13$

2. a.  $(3 \times 2) \times 4 = 24$   
 b.  $3 \times (2 \times 4) = 24$

6. a.  $(8 \div 2) \times 2 = 8$   
 b.  $8 \div (2 \times 2) = 2$

3. a.  $(2 \times 1) \times 5 = 10$   
 b.  $2 \times (1 \times 5) = 10$

7. a.  $(9 - 5) + 3 = 7$   
 b.  $9 - (5 + 3) = 1$

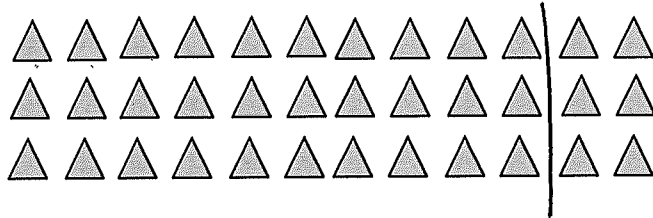
4. a.  $(4 \times 2) \times 2 = 16$   
 b.  $4 \times (2 \times 2) = 16$

8. a.  $(8 \times 5) - 4 = 36$   
 b.  $8 \times (5 - 4) = 8$

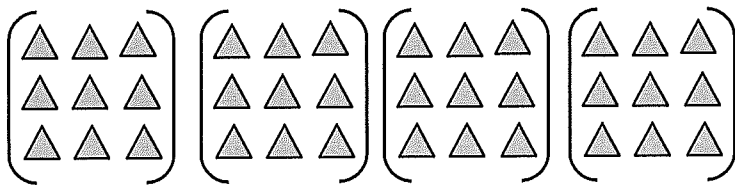
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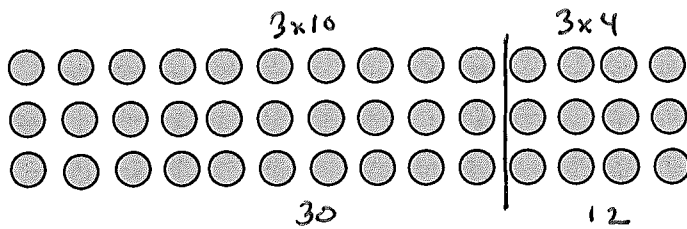
1. Use the array to complete the equation.



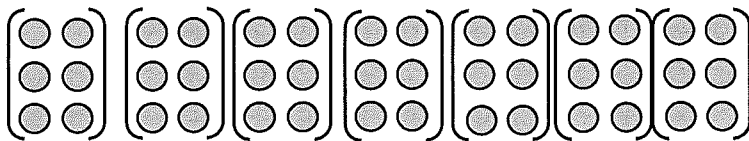
a)  $3 \times 12 = \underline{36}$



b)  $(3 \times 3) \times 4$   
 $= \underline{9} \times 4$   
 $= \underline{36}$



c)  $3 \times 14 = \underline{42}$



d)  $(\underline{3} \times \underline{2}) \times 7$   
 $= \underline{6} \times \underline{7}$   
 $= \underline{42}$

2. Place ( ) in the equations to simplify. Then solve. The first one has been done for you.

$3 \times 16 = 3 \times (2 \times 8)$   
 $= (3 \times 2) \times 8$   
 $= \underline{6} \times 8$

48

$2 \times 14 = 2 \times (2 \times 7)$   
 $= (2 \times 2) \times 7$   
 $= \underline{4} \times 7$

28

$3 \times 12 = 3 \times (3 \times 4)$   
 $= 3 \times (3 \times 4)$   
 $= \underline{3} \times \underline{12}$

36

$3 \times 14 = (3 \times 2) \times 7$   
 $= (3 \times 2) \times 7$   
 $= \underline{6} \times \underline{7}$

42

$15 \times 3 = 5 \times (3 \times 3)$   
 $= 5 \times (3 \times 3)$   
 $= \underline{5} \times \underline{9}$

45

$15 \times 2 = 5 \times (3 \times 2)$   
 $= 5 \times (3 \times 2)$   
 $= \underline{5} \times \underline{6}$

30

3. Charlotte finds the answer to  $16 \times 2$  by thinking about  $8 \times 4$ . Explain her strategy.

$$\begin{array}{c} \wedge \\ (8 \times 2) \times 2 \\ 16 \times 2 \end{array}$$

She broke the 4 into  $2 \times 2$  and multiplied the <sup>one</sup>  $2 \times 8$  to get 16.



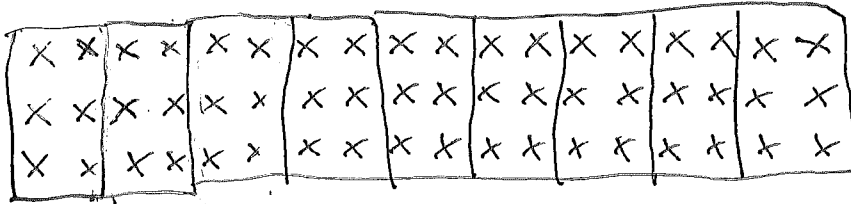
Name \_\_\_\_\_

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Simplify to find the answer to  $18 \times 3$ . Show your work and explain your strategy.

$$\begin{aligned}
 18 \times 3 &= (9 \times 2) \times 3 \\
 &= 9 \times (2 \times 3) \leftarrow \text{can group any way and not change the product.} \\
 &= 9 \times 6 \leftarrow \text{easier to multiply} \\
 &= 54
 \end{aligned}$$

$18 \times 3 = 54$

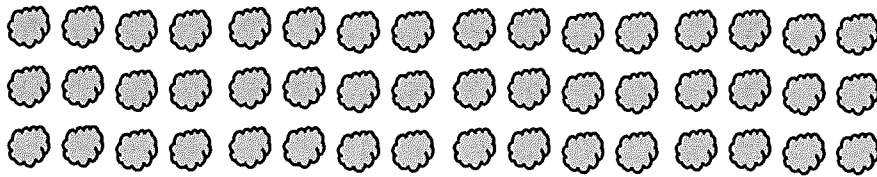


9 groups of 6 is the same as 3 groups of 18.

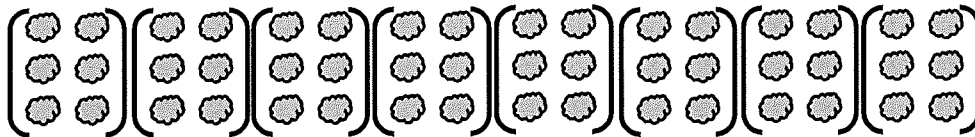
Name \_\_\_\_\_

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1. Use the array to complete the equation.

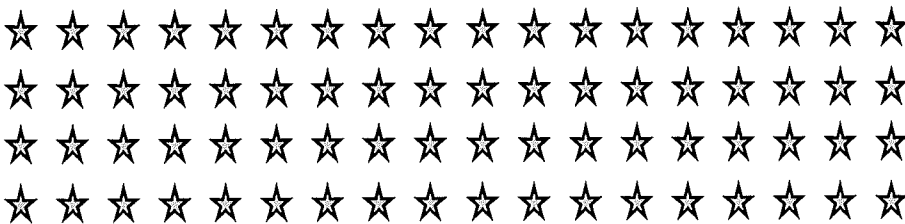


a.  $3 \times 16 = \underline{48}$

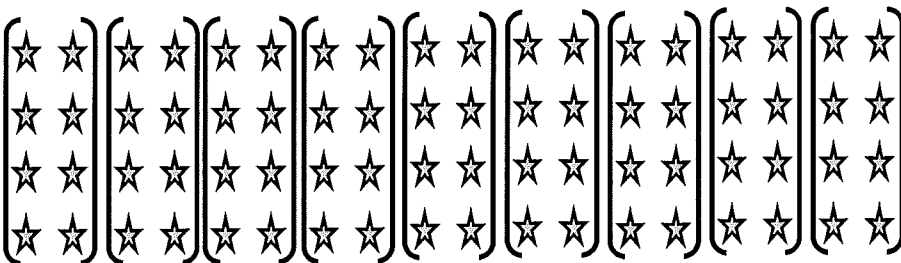


b.  $(3 \times \underline{2}) \times 8$   
 $= \underline{6} \times \underline{8}$   
 $= \underline{48}$

*Solving B helps you answer A or you could count A.*



c.  $4 \times 18 = \underline{72}$



d.  $(4 \times \underline{2}) \times 9$   
 $= \underline{8} \times \underline{9}$   
 $= \underline{72}$

2. Place ( ) in the equations to simplify and solve.

$$\left. \begin{aligned} 12 \times 4 &= (6 \times 2) \times 4 \\ &= 6 \times (2 \times 4) \\ &= 6 \times \underline{8} \end{aligned} \right\} = \underline{48}$$

$$\left. \begin{aligned} 3 \times 14 &= 3 \times (2 \times 7) \\ &= (3 \times 2) \times 7 \\ &= \underline{6} \times 7 \end{aligned} \right\} = \underline{42}$$

$$\left. \begin{aligned} 3 \times 12 &= 3 \times (3 \times 4) \\ &= 3 \times 3 \times 4 \\ &= \underline{9} \times 4 \end{aligned} \right\} = \underline{36}$$

3. Solve. Then match the related facts.

$$\begin{array}{r} 35 \\ +35 \\ \hline 70 \end{array}$$

- a.  $20 \times 2 = \underline{40} =$   ~~$6 \times (5 \times 2)$~~
- b.  $30 \times 2 = \underline{60} =$   ~~$8 \times (5 \times 2)$~~
- c.  $35 \times 2 = \underline{70} =$   ~~$4 \times (5 \times 2)$~~
- d.  $40 \times 2 = \underline{80} =$   ~~$7 \times (5 \times 2)$~~

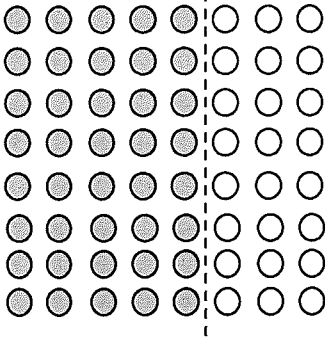
Name \_\_\_\_\_

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1. Label the arrays. Then fill in the blanks below to make the statements true.

a)  $8 \times 8 = \underline{64}$

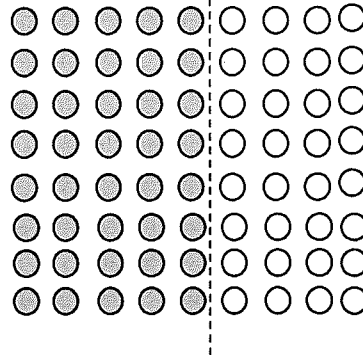
$(8 \times 5) = \underline{40}$      $(8 \times \underline{3}) = \underline{24}$



$$\begin{aligned} 8 \times 8 &= 8 \times (5 + \underline{3}) \\ &= (8 \times 5) + (8 \times \underline{3}) \\ &= \underline{40} + \underline{24} \\ &= \underline{64} \end{aligned}$$

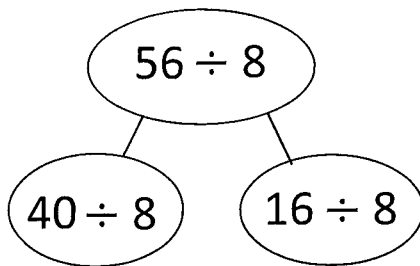
b)  $8 \times 9 = 9 \times 8 = \underline{72}$

$(8 \times 5) = \underline{40}$      $(8 \times \underline{4}) = \underline{32}$



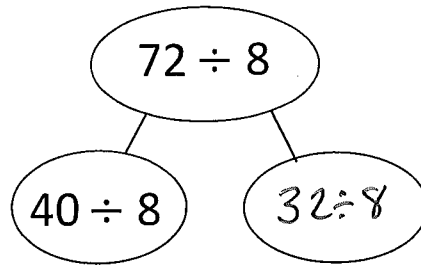
$$\begin{aligned} 9 \times 8 &= 8 \times (5 + \underline{4}) \\ &= (8 \times 5) + (8 \times \underline{4}) \\ &= \underline{40} + \underline{32} \\ &= \underline{72} \end{aligned}$$

2. Break apart and distribute to solve  $56 \div 8$ .



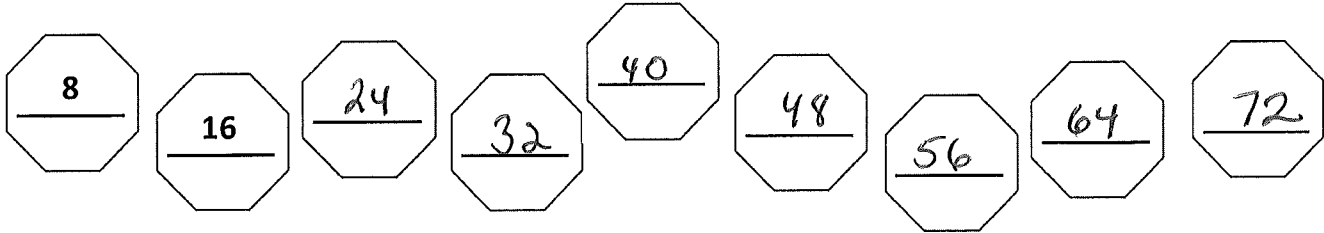
$$\begin{aligned} 56 \div 8 &= (40 \div 8) + (\underline{16} \div 8) \\ &= 5 + \underline{2} \\ &= \underline{7} \end{aligned}$$

3. Break apart and distribute to solve  $72 \div 8$ .



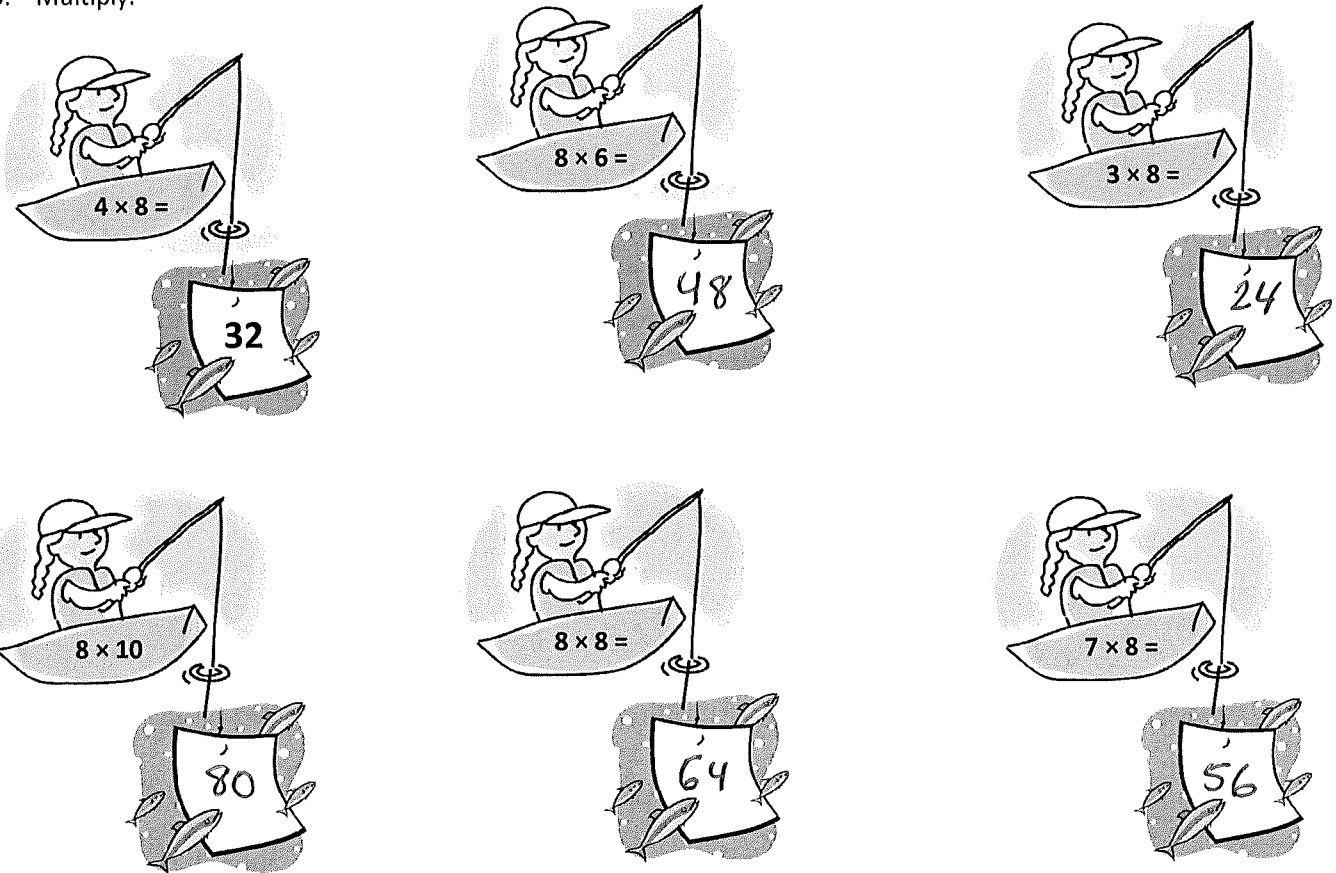
$$\begin{aligned} 72 \div 8 &= (40 \div 8) + (\underline{32} \div 8) \\ &= 5 + \underline{4} \\ &= \underline{9} \end{aligned}$$

4. An octagon has 8 sides. Skip-count to find the total number of sides on 9 octagons.



Nine octagons have a total of 72 sides.

5. Multiply.



6. Match.

Umbrella 1:  $24 \div 8$

Umbrella 2:  $32 \div 8$

Umbrella 3:  $16 \div 8$

Umbrella 4:  $64 \div 8$

Umbrella 5:  $48 \div 8$

Umbrella 6:  $72 \div 8$

Droplet 1: 1

Droplet 2: 2

Droplet 3: 3

Droplet 4: 4

Droplet 5: 5

Droplet 6: 6

Droplet 7: 7

Droplet 8: 8

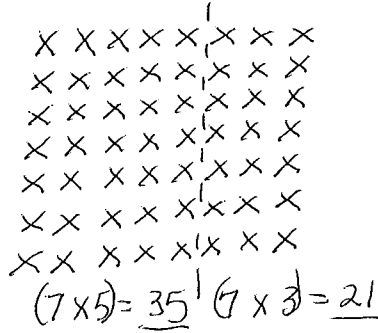
Droplet 9: 9

Name \_\_\_\_\_

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Use the break apart and distribute strategy to solve the following problem. You may or may not choose to draw an array.

$$7 \times 8 = \underline{56}$$

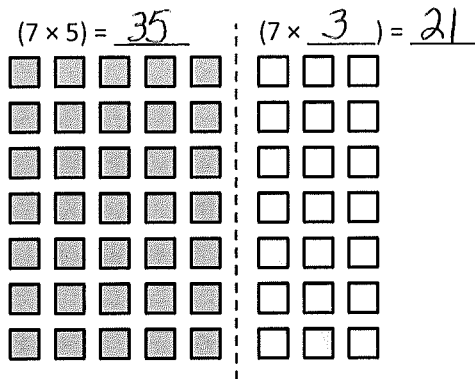


Name \_\_\_\_\_

Date \_\_\_\_\_

1. Label the array. Then fill in the blanks to make the statements true.

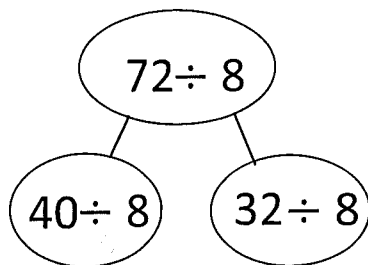
a)  $8 \times 7 = 7 \times 8 = \underline{56}$



$$\begin{aligned}
 8 \times 7 &= 7 \times (5 + \underline{3}) \\
 &= (7 \times 5) + (7 \times \underline{3}) \\
 &= \underline{35} + \underline{21} \\
 &= \underline{56}
 \end{aligned}$$

2. Break apart and distribute to solve

$72 \div 8$ .



$72 \div 8 = (40 \div 8) + (\underline{32} \div 8)$

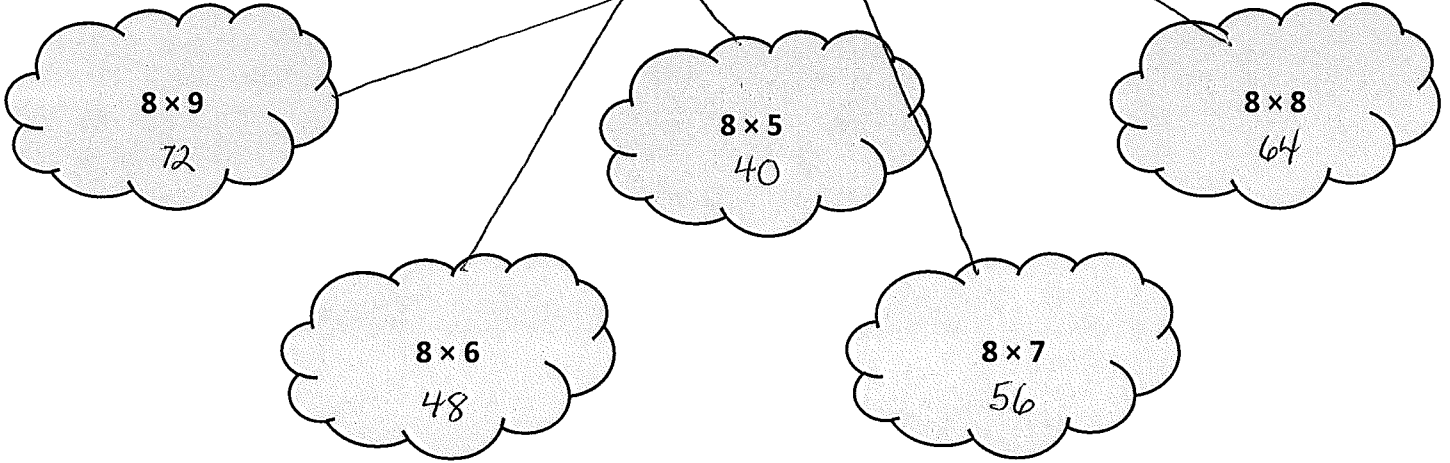
$= 5 + \underline{4}$

$= \underline{9}$



3. Count by 8. Then match each multiplication problem with its value.

8, 16, 24, 32, 40, 48, 56, 64, 72, 80.

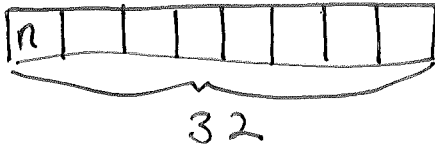


4. Divide.

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1. Ms. Santor divides 32 students into 8 equal groups for a field trip. Draw a tape diagram and label the number of students in each group as  $n$ . Write an equation and solve for  $n$ .

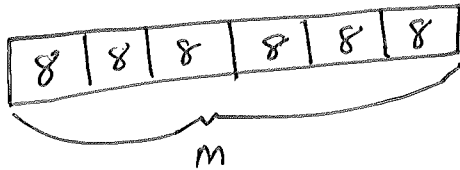


$$32 \div 8 = n$$

$$n = 4$$

There are 4 students in each group.

2. Tara buys 6 packs of printer paper. Each pack of paper costs \$8. Draw a tape diagram and label the total amount she spends as  $m$ . Write an equation and solve for  $m$ .

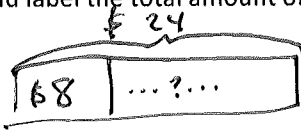


$$8 \times 6 = m$$

$$m = 48$$

She spent \$48 on paper.

3. Mr. Reed spends \$24 on coffee beans. How many kilograms of coffee beans does he buy? Draw a tape diagram and label the total amount of coffee beans he buys as  $c$ . Write an equation and solve for  $c$ .



$$24 \div 8 = 3$$

He buys 3 one kg. bags of coffee.

\$8 for 1 kg



4. Eight boys equally share 4 packs of baseball cards. Each pack contains 10 cards. How many cards does each boy get?

8 boys share 40 cards  
 $40 \div 8 = 5$

4 packs of 10 cards  
 $4 \times 10 = 40$  cards

Each boy gets 5 cards.

5. There are 8 bags of yellow and green balloons. Each bag contains 7 balloons. If there are 35 yellow balloons, how many green balloons are there?

$8 \times 7 = 56$  balloons

$$\begin{array}{r} 56 \text{ total} \\ - 35 \text{ yellow} \\ \hline 21 \text{ green} \end{array}$$

There are  
 21 green  
 balloons.

6. The fruit seller packs 72 oranges into bags of 8 each. He sells all the oranges at \$4 a bag. How much money did he receive?

$72 \div 8 = 9$  bags

$9 \times 4 = \$36$

He received  
 \$36.

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1. Erica buys some packs of rubber bracelets. There are 8 bracelets in each pack.

a. How many packs of rubber bracelets does she buy if she has a total of 56 bracelets? Draw a tape diagram and label the total number of packages as  $p$ . Write an equation and solve for  $p$ .

$56 \div 8 = p$

56						
1	2	3	4	5	6	7
8	16	24	32	40	48	56

$p = 7$

b. After giving some bracelets away, Erica has 18 bracelets left. How many did she give away?

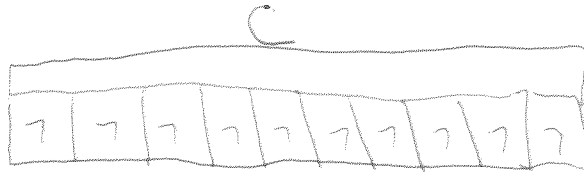
56	
?	18

$$\begin{array}{r} 4 \ 16 \\ \cancel{5 \ 6} \\ - 18 \\ \hline 38 \text{ bracelets} \end{array}$$

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1. Jenny bakes 10 cookies. She puts 7 chocolate chips on each cookie. Draw a tape diagram and label the total of amount of chocolate chips as  $c$ . Write an equation and solve for  $c$ .



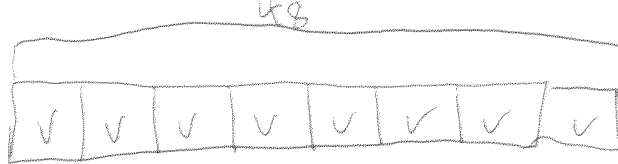
$$10 \times 7 = c$$

$$10 \times 7 = 70$$

$$c = 70$$

chocolate chips

2. Mr. Lopez arranges 48 dry erase markers into 8 equal groups for his math stations. Draw a tape diagram and label the number of dry erase markers in each group as  $v$ . Write an equation and solve for  $v$ .

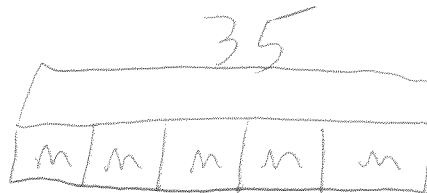


$$48 \div v = 8$$

$$48 \div 6 = 8$$

$$v = 6 \text{ dry erase markers}$$

3. There are 35 computers in the lab. Five students each turn off an equal number of computers. How many computers does each student turn off? Label the unknown as  $m$ , then solve.

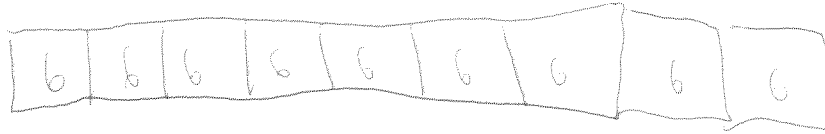


$$35 \div 5 = m$$

$$35 \div 5 = 7$$

$$m = 7 \text{ computers}$$

4. There are 9 bins of books. Each bin has 6 comic books. How many comic books are there altogether?



$$9 \times 6 = 54$$

5. There are 8 trail mix bags in one box. Clarissa buys 5 boxes. She gives an equal number of bags of trail mix to 4 friends. How many bags of trail mix does each friend receive?

Clarissa buys



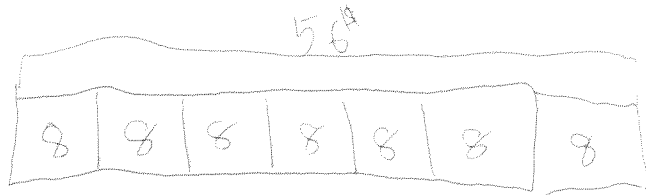
$$5 \times 8 = 40$$

Clarissa's 40 friends

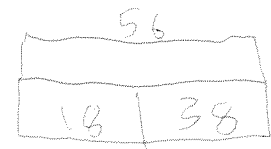


$$40 \div 4 = 10$$

6. Leo earns \$8 a week for doing chores. After 7 weeks, he buys a gift and has \$38 left. How much does he spend on the gift?



$$8 \times 7 = 56$$



$$\begin{array}{r} 56 \\ - 38 \\ \hline 18 \end{array}$$