1. Complete the charts below.

a. A tricycle has 3 wheels.

<table>
<thead>
<tr>
<th>Number of tricycles</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of wheels</td>
<td>9</td>
<td>12</td>
<td>15</td>
<td>18</td>
<td>21</td>
</tr>
</tbody>
</table>

b. A tiger has 4 legs.

<table>
<thead>
<tr>
<th>Number of tigers</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of legs</td>
<td>20</td>
<td>24</td>
<td>28</td>
<td>32</td>
<td>36</td>
</tr>
</tbody>
</table>

c. A pack has 5 erasers.

<table>
<thead>
<tr>
<th>Number of packs</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of erasers</td>
<td>30</td>
<td>35</td>
<td>40</td>
<td>45</td>
<td>50</td>
</tr>
</tbody>
</table>

2. Write two multiplication facts for each array.

\[ 24 \times 6 = 144 \]
\[ 24 \times 4 = 96 \]
\[ 24 \times 8 = 192 \]
\[ 24 \times 3 = 72 \]
3. Match the expressions.

- $3 \times 6$ corresponds to 7 threes.
- $3 \text{ sevens}$
- $2 \times 10$ corresponds to 9 fives.
- $2 \text{ eights}$
- $5 \times 9$ corresponds to 6 threes.
- $10 \text{ twos}$
- $8 \times 2$
- $6 \times 3$

4. Complete the equations.

   a. $2 \times 6 = \frac{6}{12} \text{ twos}$
   
   b. $3 \times 6 = 6 \text{ threes}$
   
   c. $4 \times 8 = \frac{8}{4} \text{ twos}$
   
   d. $4 \times 7 = \frac{7}{4} \text{ twos}$
   
   e. $5 \text{ twos} + 2 \text{ twos} = \frac{7}{2} \text{ fives}$
   
   f. $5 \text{ fives} + 1 \text{ five} = 6 \times 5$

   = 18

   = 32

   = 14

   = 30
1. Each block has a value of 9.

Unit form: \( 5 \text{nines} \)

Facts: \( 5 \times 9 = 9 \times 5 \)

Total = 45

Unit form: 6 nines = \( 5 \text{nines} + 1 \text{nine} \)

\[ 45 + \frac{9}{9} = 54 \]

Facts: \( 6 \times 9 = 54 \)

\( 9 \times 6 = 54 \)
2. There are 6 blades on each windmill. How many total blades are on 7 windmills? Use a fives fact to solve.

\[(5 \times 6) + (2 \times 6) = 42\]

There are 42 blades on 7 windmills.

3. Juanita organizes her magazines into 3 equal piles. She has a total of 18 magazines. How many magazines are in each pile?

\[18 \div 3 = 6\]

Juanita has 6 magazines in each pile.

4. Markuo spends $27 on some plants. Each plant costs $9. How many plants does he buy?

\[27 \div 9 = 3\]

Markuo buys 3 plants.
1. a. Complete the pattern.

\[30 \quad 40 \quad 50 \quad 60 \quad 70 \quad 80 \quad 90 \quad 100\]

b. Find the value of the unknown.

\[
10 \times 2 = d \quad d = \underline{20} \quad 10 \times 6 = w \quad w = \underline{60} \\
3 \times 10 = e \quad e = \underline{30} \quad 10 \times 7 = n \quad n = \underline{70} \\
f = 4 \times 10 \quad f = \underline{40} \quad g = 8 \times 10 \quad g = \underline{80} \\
p = 5 \times 10 \quad p = \underline{50}
\]

2. Each equation contains a letter representing the unknown. Find the value of the unknown.

<table>
<thead>
<tr>
<th>Equation</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 + 2 = n</td>
<td>n = 4</td>
</tr>
<tr>
<td>3 \times a = 12</td>
<td>a = 4</td>
</tr>
<tr>
<td>p \times 8 = 40</td>
<td>p = 5</td>
</tr>
<tr>
<td>18 + 6 = c</td>
<td>c = 3</td>
</tr>
<tr>
<td>d \times 4 = 24</td>
<td>d = 6</td>
</tr>
<tr>
<td>h + 7 = 5</td>
<td>h = 35</td>
</tr>
<tr>
<td>6 \times 3 = f</td>
<td>f = 18</td>
</tr>
<tr>
<td>32 + y = 4</td>
<td>y = 8</td>
</tr>
</tbody>
</table>
3. Pedro buys 4 books at the fair for $7 each.
   a. What is the total amount Pedro spends on 4 books? Use the letter $b$ to represent the total amount
      Pedro spends, and then solve the problem.

      \[
      \begin{array}{c}
      \text{4 books} \\
      \text{\$7 each}
      \end{array}
      \]
      \[
      4 \times 7 = 28
      \]
      Pedro spends a total of $28 on 4 books.

   b. Pedro hands the cashier 3 ten dollar bills. How much change will he receive? Write an equation to
      solve. Use the letter $c$ to represent the unknown.

      \[
      \begin{array}{c}
      \text{3 \times 10 = \$30}
      \end{array}
      \]
      \[
      30 - 28 = c
      \]
      Pedro will receive $2 change.

4. On field day, the first grade dash is 25 meters long. The third grade dash is twice the distance of the first
   grade dash. How long is the third grade dash? Use a letter to represent the unknown and solve.

   \[
   \begin{array}{c}
   \text{1st grade} \\
   25 m \\
   \text{3rd grade}
   \end{array}
   \]
   \[
   25 \times 2 = r
   \]
   \[
   25 \times 2 = 50
   \]
   \[
   r = 50 \text{ m}
   \]
   The third grade dash is 50 meters long.
1. Use number bonds to help you skip-count by six by either making a ten or adding to the ones.

   a. $6 + 6 = 10 + 2 = 12$

   b. $12 + 6 = 10 + 8 = 18$

   c. $18 + 6 = 20 + 4 = 24$

   d. $24 + 6 = 20 + 10 = 30$

   e. $30 + 6 = 36$

   f. $36 + 6 = 40 + 2 = 42$

   g. $42 + 6 = 40 + 8 = 48$

   h. $48 + 6 = 50 + 4 = 54$

   i. $54 + 6 = 50 + 10 = 60$
2. Count by six to fill in the blanks below.

6, 12, 18, 24, 30

Complete the multiplication equation that represents the final number in your count-by.

$6 \times 5 = 30$

Complete the division equation that represents your count-by.

$30 \div 6 = 5$

3. Count by six to fill in the blanks below.

6, 12, 18, 24, 30, 36

Complete the multiplication equation that represents the final number in your count-by.

$6 \times 6 = 36$

Complete the division equation that represents your count-by.

$36 \div 6 = 6$

4. Count by 6 to solve $48 \div 6$. Show your work below.

6, 12, 18, 24, 30, 36, 42, 48

$6 \times 8 = 48$

$48 \div 6 = 8$
1. Use number bonds to help you skip-count by seven by making ten or adding to the ones.

(a) $7 + \_ = \underline{10} + 4 = \underline{14}$

(b) $14 + \_ = \underline{20} + 1 = \underline{21}$

(c) $21 + \_ = \underline{20} + 8 = \underline{28}$

(d) $28 + \_ = \underline{30} + 5 = \underline{35}$

(e) $35 + \_ = \underline{40} + 2 = \underline{42}$

(f) $42 + \_ = \underline{40} + 9 = \underline{49}$

(g) $49 + 7 = \underline{50} + 6 = \underline{56}$

(h) $56 + 7 = \underline{60} + 3 = \underline{63}$
2. Skip-count by seven to fill in the blanks. Then use the multiplication equation to write the related division fact directly to the right.

\[
\begin{align*}
70 & \quad 7 \times 10 = 70 \quad 70 \div 7 = 10 \\
63 & \quad 7 \times 9 = 63 \quad 63 \div 7 = 9 \\
56 & \quad 7 \times 8 = 56 \quad 56 \div 7 = 8 \\
49 & \quad 7 \times 7 = 49 \quad 49 \div 7 = 7 \\
42 & \quad 7 \times 6 = 42 \quad 42 \div 7 = 6 \\
35 & \quad 7 \times 5 = 35 \quad 35 \div 7 = 5 \\
28 & \quad 7 \times 4 = 28 \quad 28 \div 7 = 4 \\
21 & \quad 7 \times 3 = 21 \quad 21 \div 7 = 3 \\
14 & \quad 7 \times 2 = 14 \quad 14 \div 7 = 2 \\
7 & \quad 7 \times 1 = 7 \quad 7 \div 7 = 1 \\
\end{align*}
\]
1. Label the tape diagrams. Then fill in the blanks below to make the statements true.

a. \( 6 \times 7 = 42 \)

\[ (5 \times 7) = 35 \quad (1 \times 7) = 7 \]

\[ 7 \quad 7 \]  

\[ (6 \times 7) = (5 + 1) \times 7 \]
\[ = (5 \times 7) + (1 \times 7) \]
\[ = 35 + 7 \]
\[ = 42 \]

b. \( 7 \times 7 = 49 \)

\[ (5 \times 7) = 35 \quad (2 \times 7) = 14 \]

\[ 7 \quad 14 \]  

\[ (7 \times 7) = (5 + 2) \times 7 \]
\[ = (5 \times 7) + (2 \times 7) \]
\[ = 35 + 14 \]
\[ = 49 \]

c. \( 8 \times 7 = 56 \)

\[ (5 \times 7) = 35 \quad (3 \times 7) = 21 \]

\[ 7 \quad 7 \]  

\[ 8 \times 7 = (5 + 3) \times 7 \]
\[ = (5 \times 7) + (3 \times 7) \]
\[ = 35 + 21 \]
\[ = 56 \]

d. \( 9 \times 7 = 63 \)

\[ (5 \times 7) = 35 \quad (4 \times 7) = 28 \]

\[ 7 \quad 7 \]  

\[ 9 \times 7 = (5 + 4) \times 7 \]
\[ = (5 \times 7) + (4 \times 7) \]
\[ = 35 + 28 \]
\[ = 63 \]
2. Break apart 54 to solve $54 + 6$.

$$\begin{align*}
54 \div 6 &= (30 \div 6) + (24 \div 6) \\
54 + 6 &= (30 + 6) + (24 + 6) \\
= 5 + \frac{24}{6} \\
= 5 + \frac{4}{9} \\
= \frac{9}{9} \\
= 9
\end{align*}$$

3. Break apart 56 to solve $56 + 7$.

$$\begin{align*}
56 \div 7 &= (35 \div 7) + (21 \div 7) \\
56 + 7 &= (35 + 7) + (21 + 7) \\
= 5 + \frac{3}{7} \\
= 5 + \frac{8}{7} \\
= \frac{8}{1}
\end{align*}$$

4. Forty-two third grade students sit in 6 equal rows in the auditorium. How many students sit in each row? Show your thinking.

$$\begin{align*}
42 \div 6 &= (30 \div 6) + (12 \div 6) \\
42 + 6 &= (30 + 6) + (12 + 6) \\
= 5 + 2 \\
= 7
\end{align*}$$

Seven students sit in each row.

5. Ronaldo solves $7 \times 6$ by thinking of it as $(5 \times 7) + 7$. Is he correct? Explain Ronaldo's strategy.

$$\begin{align*}
7 \times 6 &= (5 \times 7) + 1 \\
7 \times 6 &= 35 + 7 \\
= 42
\end{align*}$$
1. Match the words on the arrow to the correct equation on the target.

- 7 times a number equals 42
  \[ n \times 7 = 42 \]
  \[ n = 3 \]

- 63 divided by a number equals 9
  \[ 63 \div n = 9 \]
  \[ n = 7 \]

- 36 divided by a number equals 6
  \[ 36 \div n = 6 \]
  \[ n = 6 \]

- A number times 7 equals 21
  \[ n \times 7 = 21 \]
  \[ n = 3 \]
2. Ari sells 6 boxes of pens at the school store.
   a. Each box of pens sells for $7. Draw a tape diagram and label the total amount of money he makes as $m$. Write an equation and solve for $m$.
      \[
      6 \times 7 = m \\
      6 \times 7 = 42 \\
      m = 42
      \]
      Ari makes $42.

   b. Each box contains 6 pens. Draw a tape diagram and label the total number of pens as $p$. Write an equation and solve for $p$.
      \[
      6 \times 6 = p \\
      6 \times 6 = 36 \\
      p = 36
      \]
      The total number of pens is 36.

3. Mr. Lucas divides 28 students into 7 equal groups for a project. Draw a tape diagram and label the number of students in each group as $n$. Write an equation and solve for $n$.
   \[
   28 \div 7 = n \\
   28 \div 7 = 4 \\
   n = 4
   \]
   Mr. Lucas puts 4 students in each group.
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. $\underline{7} = (4 + 3) \times 6$
   f. $\underline{18} = 4 + (3 \times 6)$
   g. $(18 + 3) + 6 = \underline{12}$
   h. $18 \div (3 + 6) = \underline{2}$

2. Use parentheses to make the equations true.
   a. $14 - \underline{(8 + 2)} = 4$
   b. $(14 - \underline{8}) \times 2 = 8$
   c. $2 + (4 \times 7) = 30$
   d. $(2 + \underline{4}) \times 7 = 42$
   e. $\underline{5} = 50 \div (5 \times 2)$
   f. $20 = (50 + \underline{5}) \times 2$
3. Determine if the equation is true or false.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>$(15 - 3) + 2 = 6$</td>
</tr>
<tr>
<td>b.</td>
<td>$(10 - 7) \times 6 = 18$</td>
</tr>
<tr>
<td>c.</td>
<td>$(35 - 7) + 4 = 8 ; (\neq 7)$</td>
</tr>
<tr>
<td>d.</td>
<td>$28 = 4 \times (20 - 13)$</td>
</tr>
<tr>
<td>e.</td>
<td>$35 = (22 - 8) + 5 ; (\neq 28)$</td>
</tr>
</tbody>
</table>

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

This is true because $3 \times 6 = 18$ would be solved first, leaving $18 + 2$ as the final equation to solve.

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

$28 \div (4 \times 7) - 3 = 25$

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

$(2 \times 6) \div 3 = 12 \div 3 = 4 \quad$ Yes, both equations equal 4. $\quad 2 \times (6 \div 3) = 2 \times 2 = 4$
1. Use the array to complete the equation.

   \[ a. \quad 3 \times 16 = \boxed{48} \]

   \[ b. \quad (3 \times 2) \times 8 = \frac{6 \times 8}{8} = \boxed{48} \]

   Solve 1st!

   \[ c. \quad 4 \times 18 = \boxed{72} \]

   \[ d. \quad (4 \times 2) \times 9 = \frac{8 \times 9}{8} = \boxed{72} \]

   Solve 1st!
2. Place () in the equations to simplify and solve.

\[ 12 \times 4 = (6 \times 2) \times 4 \]
\[ = 6 \times (2 \times 4) \]
\[ = 6 \times 8 \]
\[ = 48 \]
\[ 3 \times 14 = 3 \times (2 \times 7) \]
\[ = (3 \times 2) \times 7 \]
\[ = 6 \times 7 \]
\[ = 42 \]
\[ 3 \times 12 = 3 \times (3 \times 4) \]
\[ = (3 \times 3) \times 4 \]
\[ = 9 \times 4 \]
\[ = 36 \]

3. Solve. Then match the related facts.

a. \[ 20 \times 2 = \text{?} = 6 \times (5 \times 2) = 60 \]

b. \[ 30 \times 2 = \text{?} = 8 \times (5 \times 2) = 80 \]

c. \[ 35 \times 2 = \text{?} = 4 \times (5 \times 2) = 40 \]

d. \[ 40 \times 2 = \text{?} = 7 \times (5 \times 2) = 70 \]
1. Label the array. Then fill in the blanks to make the statements true.

   a) \[ 8 \times 7 = 7 \times 8 = 56 \]

   \[
   \frac{(7 \times 5) = \underline{35}}{\frac{\underline{\underline{35}}}{\underline{\underline{56}}}} ; \frac{(7 \times \underline{3}) = \underline{21}}{\frac{\underline{\underline{21}}}{\underline{\underline{56}}}}
   \]

   \[
   8 \times 7 = 7 \times (5 + \underline{\underline{3}}) = (7 \times 5) + (7 \times \underline{3}) = 35 + \underline{21} = \underline{56}
   \]

2. Break apart and distribute to solve \( 72 \div 8 \).

   \[
   \begin{align*}
   72 & \div 8 = \frac{5}{4} \\
   72 + 8 & = (40 + 8) + (\underline{32} + 8) \\
   & = 5 + \underline{4} \\
   & = \underline{9}
   \end{align*}
   \]
3. Count by 8. Then match each multiplication problem with its value.

\[ 8 \times 9 = 72 \]
\[ 8 \times 5 = 40 \]
\[ 8 \times 8 = 64 \]
\[ \_ \times 6 = 48 \]
\[ \_ \times 7 = 56 \]
\[ 16 \times 8 = 128 \]
\[ 40 \div 8 = 5 \]
\[ 32 \div 8 = 4 \]
\[ 48 \div 8 = 6 \]
\[ 56 \div 8 = 7 \]
\[ 72 \div 8 = 9 \]
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 \(c\).

\[
\begin{align*}
10 \text{ cookies} & \quad c = 10 \times 7 \\
\text{c = total # of chips} & \quad c = 70
\end{align*}
\]

Jenny uses a total of 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 \(v\).

\[
\begin{align*}
48 \text{ markers} & \quad v = 48 \div 8 \\
8 \text{ groups} & \quad v = 6
\end{align*}
\]

Mr. Lopez puts 6 markers in each group.

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.

\[
\begin{align*}
35 \text{ computers} & \quad m = 35 \div 5 \\
\text{5 students} & \quad m = 7
\end{align*}
\]

Each student turns off 7 computers.
4. There are 9 bins of books. Each bin has 6 comic books. How many comic books are there altogether?

9 bins of books

\[
\begin{array}{cccccccc}
& & & & & & & \\
6 & 6 & 6 & 6 & 6 & 6 & 6 & 6 \\
\end{array}
\]

\[9 \times 6 = 54\]

There are 54 comic books altogether.

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?

Steps

\[5 \text{ boxes}
\]

\[8 \text{ bags}
\]

\[1 \text{ box} = 8 \text{ bags}
\]

\[5 \times 8 = 40 \text{ bags of trail mix altogether}
\]

\[\frac{40}{4} = 10\]

Each friend receives 10 bags

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?

\[
\begin{array}{cccccccc}
\text{7 weeks} & & & & & & & \\
8 & 8 & 8 & 8 & 8 & 8 & 8 & 8
\end{array}
\]

\[
m = \text{total earned in 7 weeks} = 7 \times 8 = 56
\]

\[
\begin{array}{cccccccc}
\text{4 weeks} & & & & & & & \\
$56 & & & & & & & \\
- & 38 & & & & & & \\
\hline
$18 & & & & & & & \\
\end{array}
\]

Leo spend $18 on the gift.
1. Find the value of each row. Then add the rows to find the total.

a. Each  has a value of 6.
   \[ 9 \times 6 = 54 \]
   \[ 9 \times 6 = (5 + 4) \times 6 \]
   \[ = (5 \times 6) + (4 \times 6) \]
   \[ = 30 + 24 \]
   \[ = 54 \]

b. Each  has a value of 7.
   \[ 9 \times 7 = 63 \]
   \[ 9 \times 7 = (5 + 4) \times 7 \]
   \[ = (5 \times 7) + (4 \times 7) \]
   \[ = 35 + 28 \]
   \[ = 63 \]

c. Each  has a value of 8.
   \[ 9 \times 8 = 72 \]
   \[ 9 \times 8 = (5 + 4) \times 8 \]
   \[ = (5 \times 8) + (4 \times 8) \]
   \[ = 40 + 32 \]
   \[ = 72 \]

d. Each  has a value of 9.
   \[ 9 \times 9 = 81 \]
   \[ 9 \times 9 = (5 + 4) \times 9 \]
   \[ = (5 \times 9) + (4 \times 9) \]
   \[ = 45 + 36 \]
   \[ = 81 \]
2. Match.

a. 9 fives = 10 fives - 1 five
   \[ = 50 - 5 \]

b. 9 sixes = 10 sixes - 1 six
   \[ = 60 - 6 = 54 \]

c. 9 sevens = 10 sevens - 1 seven
   \[ = 70 - 7 = 63 \]

d. 9 eights = 10 eights - 1 eight
   \[ = 80 - 8 = 72 \]

e. 9 nines = 10 nines - 1 nine
   \[ = 90 - 9 = 81 \]

f. 9 fours = 10 fours - 1 four
   \[ = 40 - 4 = 36 \]
1. a. Skip-count by nines down from 90.

   \[90, 81, 72, 63, 54, 45, 36, 27, 18, 9\]

b. Look at the tens place in the count-by. What is the pattern?

   The tens place goes down by 1.

c. Look at the ones place in the count-by. What is the pattern?

   The ones place goes up by 1.

2. Each number sentence contains a letter representing the unknown. Find the value of each unknown.

   \[
   \begin{align*}
   a \times 9 &= 18 & m \div 9 &= 3 & e \times 9 &= 45 & f \div 9 &= 4 \\
   a &= \underline{2} & m &= \underline{27} & e &= \underline{5} & f &= \underline{36} \\
   9 \times d &= 81 & w \div 9 &= 6 & 9 \times s &= 90 & k \div 9 &= 8 \\
   d &= \underline{9} & w &= \underline{54} & s &= \underline{10} & k &= \underline{72}
   \end{align*}
   \]
3. Solve.

a. What is 10 more than 0? 10
   What is 1 less? 9
   \[ 1 \times 9 = 9 \]

b. What is 10 more than 9? 19
   What is 1 less? 18
   \[ 2 \times 9 = 18 \]

c. What is 10 more than 18? 28
   What is 1 less? 27
   \[ 3 \times 9 = 27 \]

d. 10 more than 27? 37
   What is 1 less? 36
   \[ 4 \times 9 = 36 \]

e. What is 10 more than 36? 46
   What is 1 less? 45
   \[ 5 \times 9 = 45 \]

f. What is 10 more than 45? 55
   What is 1 less? 54
   \[ 6 \times 9 = 54 \]

g. What is 10 more than 54? 64
   What is 1 less? 63
   \[ 7 \times 9 = 63 \]

h. What is 10 more than 63? 73
   What is 1 less? 72
   \[ 8 \times 9 = 72 \]

i. What is 10 more than 72? 82
   What is 1 less? 81
   \[ 9 \times 9 = 81 \]

j. What is 10 more than 81? 91
   What is 1 less? 90
   \[ 10 \times 9 = 90 \]

4. Explain the pattern in Problem 2 and use the pattern to find the next 3 facts. Add 10, \[-1\] to find the next multiple of 9.

\[ 11 \times 9 = 99 \]
\[ 12 \times 9 = 108 \]
\[ 13 \times 9 = 117 \]

10 more than 90 = 100
1 less = 99
\[ 11 \times 9 = 99 \]

10 more than 99 = 109
1 less = 108
\[ 12 \times 9 = 108 \]

10 more than 108 = 118
1 less than 118 = 117
\[ 13 \times 9 = 117 \]
1. Multiply. Then add the digits in each product.

<table>
<thead>
<tr>
<th>10 × 9 = 90</th>
<th>9 + 0 = 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 × 9 = 81</td>
<td>8 + 1 = 9</td>
</tr>
<tr>
<td>8 × 9 = 72</td>
<td>7 + 2 = 9</td>
</tr>
<tr>
<td>7 × 9 = 63</td>
<td>6 + 3 = 9</td>
</tr>
<tr>
<td>6 × 9 = 54</td>
<td>5 + 4 = 9</td>
</tr>
<tr>
<td>5 × 9 = 45</td>
<td>4 + 5 = 9</td>
</tr>
<tr>
<td>4 × 9 = 36</td>
<td>3 + 6 = 9</td>
</tr>
<tr>
<td>3 × 9 = 27</td>
<td>2 + 7 = 9</td>
</tr>
<tr>
<td>2 × 9 = 18</td>
<td>1 + 8 = 9</td>
</tr>
<tr>
<td>1 × 9 = 9</td>
<td>0 + 9 = 9</td>
</tr>
</tbody>
</table>

What pattern did you notice in the table? How can this strategy help you check your work with nines facts?

The product of the nines is that the tens go up by one and the ones go down by 1 as the factors increase. Also, the sum of the product's tens and ones equals 9.
2. Thomas calculates $9 \times 7$ by thinking about it as $70 - 7 = 63$. Explain Thomas' strategy.

\[
\begin{align*}
9 \times 7 &= 63 \\
\text{Ten sevens} &= 70 - 1 \text{ seven} - \\
&= 70 - 7 = 63 \\
\text{so } 9 \times 7 &= 63
\end{align*}
\]

3. Alexia figures out the answer to $6 \times 9$ by lowering the thumb on her right hand, shown below. What is the answer? Explain Alexia's strategy.

\[
\text{(show)}
\]

Alexia lowers the right thumb to indicate the 6 in $6 \times 9$. Then she can count the fingers on the left side = 5 (tens #)
And 4 fingers on the right = 4 (ones #)
Therefore, the answers to $6 \times 9 = 54$

4. Travis writes $72 = 9 \times 8$. Is he correct? Explain at least 2 strategies Travis can use to help him check his work.

1. Travis can add the 2 numbers in the product of 72 to get 9.

2. Travis can think of $9 \times 8$ as $9 = 10 - 1$

\[
\begin{align*}
\text{Tens eights} &= 80 - \text{ one eight} = 72
\end{align*}
\]

3. Travis could lower the eights finger when counting across. He then has 7 tens, 2 ones or 72 as a product.
1. The store clerk equally divides 36 apples between 9 baskets. Draw a tape diagram and label the number of apples in each basket as $a$. Write an equation and solve for $a$.

\[ 36 \div 9 = a \]
\[ a = 4 \]

The clerk puts 4 apples into each basket.

2. Elijah gives each of his friends a pack of 9 almonds. He gives away a total of 45 almonds. How many packs of almonds did he give away? Model using a letter to represent the unknown, then solve.

\[ 45 \div 9 = c \]
\[ c = 5 \]

Elijah gives away 5 packs.


\[ 9 \times 7 = r \]
\[ r = 63 \]

The total cost of 7 movies is $63.
4. Mr. Doyle shares 1 roll of bulletin board paper equally with 8 teachers. The total length of the roll is 72 meters. How much bulletin board paper does each teacher get?

\[ 72 \div 8 = m \]
\[ m = 9 \]

Mr. Doyle gives each teacher 9 meters.

5. There are 9 pens in a pack. Ms. Ochoa buys 9 packs. After giving her students some pens, she has 27 pens left. How many pens did she give away?

9 packs of pens

\[ 9 \times 9 = 81 \text{ pens altogether.} \]

Ms. Ochoa gives away 54 pens.

6. Allen buys 9 packs of trading cards. There are 10 cards in each pack. He can trade 30 cards for a comic book. How many comic books can he get if he trades all of his cards?

9 packs of cards

Allen can get 3 comic books.
1. Solve.
   a. $4 \times 1 = \underline{\hspace{1cm}}$
   b. $4 \times 0 = \underline{\hspace{1cm}}$
   c. $\underline{\hspace{1cm}} \times 1 = 5$
   d. $\underline{\hspace{1cm}} + 5 = 0$
   e. $6 \times \underline{\hspace{1cm}} = 6$
   f. $\underline{\hspace{1cm}} + 6 = 0$
   g. $0 + 7 = \underline{\hspace{1cm}}$
   h. $7 \times \underline{\hspace{1cm}} = 0$
   i. $8 + \underline{\hspace{1cm}} = 8$
   j. $\underline{\hspace{1cm}} \times 8 = 8$
   k. $9 \times \underline{\hspace{1cm}} = 9$
   l. $9 + \underline{\hspace{1cm}} = 1$

2. Match each equation with its solution.

- $9 \times 1 = w$  $w = 6$
- $w \times 1 = 6$  $w = 7$
- $7 + w = 1$  $w = 8$
- $1 \times w = 8$  $w = 9$
- $w + 8 = 0$  $w = 1$
- $9 + 9 = w$  $w = 0$
3. Let \( c = 8 \). Then determine whether the equations are true or false.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Example: False.</th>
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</thead>
<tbody>
<tr>
<td>a.</td>
<td>( c \times 0 = 8 )</td>
<td>False.</td>
</tr>
<tr>
<td>b.</td>
<td>( 0 \times c = 0 )</td>
<td>True.</td>
</tr>
<tr>
<td>c.</td>
<td>( c \times 1 = 8 )</td>
<td>True.</td>
</tr>
<tr>
<td>d.</td>
<td>( 1 \times c = 8 )</td>
<td>True.</td>
</tr>
<tr>
<td>e.</td>
<td>( 0 + c = 8 )</td>
<td>False.</td>
</tr>
<tr>
<td>f.</td>
<td>( 8 + c = 1 )</td>
<td>True.</td>
</tr>
<tr>
<td>g.</td>
<td>( 0 + c = 0 )</td>
<td>True.</td>
</tr>
<tr>
<td>h.</td>
<td>( c + 0 = 8 )</td>
<td>False.</td>
</tr>
</tbody>
</table>

4. Rajan says that any number multiplied by 1 equals that number.

a. Write a multiplication equation using \( n \) to represent Rajan's statement.

\[ n \times 1 = n \]

b. Using your equation from Part (a), let \( n = 5 \) and draw a picture to show that the new equation is true.

\[ 5 \times 1 = 5 \]
1. Write the products as fast as you can into the chart.

<table>
<thead>
<tr>
<th>x</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<td>24</td>
<td>32</td>
<td>40</td>
<td>48</td>
<td>56</td>
<td>64</td>
</tr>
</tbody>
</table>

a. Color the rows and columns with even factors yellow.

b. What do you notice about the factors and products that are left unshaded?

All of the factors left are odd. All of the products left are odd. Odd x odd = odd.

c. Complete the chart below by filling in each blank and writing an example for each rule.

<table>
<thead>
<tr>
<th>Rule</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>odd times odd equals <strong>odd</strong></td>
<td>3x3=9, 6x5=30</td>
</tr>
<tr>
<td>even times even equals <strong>even</strong></td>
<td>2x8=16, 4x8=32</td>
</tr>
<tr>
<td>even times odd equals <strong>even</strong></td>
<td>6x3=18, 2x5=10</td>
</tr>
</tbody>
</table>
d. Explain how $7 \times 6 = (5 \times 6) + (2 \times 6)$ is shown in the table.

\[
7 \times 6 = 5 \times 6 + 2 \times 6 \\
= 30 + 12 \\
= 42
\]

\[
7 \times 6 = 42
\]

e. Use what you know to find the product of $4 \times 16$ or $8$ fours $+ 8$ fours.

\[
4 \times 16 = (8 \times 4) + (8 \times 4) \\
= 32 + 32 \\
= 64
\]

2. In the lesson, we found that $n \times n$ is the sum of the first $n$ odd numbers. Use this pattern to find the value of $n$ for each equation below. The first is done for you.

\[\text{a. } 1 + 3 + 5 = n \times n\]

\[\text{\underline{9 numbers}}\]

\[9 = 3 \times 3\]

\[\text{b. } 1 + 3 + 5 + 7 = n \times n\]

\[\text{\underline{4 numbers}}\]

\[16 = 4 \times 4\]

\[\text{c. } 1 + 3 + 5 + 7 + 9 + 11 = n \times n\]

\[\text{\underline{6 numbers}}\]

\[36 = 6 \times 6\]

\[\text{d. } 1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17 = n \times n\]

\[\text{\underline{9 numbers}}\]

\[64 = 8 \times 8\]

\[\text{\underline{10 at 9}}\]

\[\text{e. } 1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17 + 19 = n \times n\]

\[\text{\underline{10 numbers}}\]

\[100 = 10 \times 10\]
<table>
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</tr>
</tbody>
</table>
Directions: Use the RDW process for each problem. Explain why your answer is reasonable.

1. Mrs. Portillo's cat weighs 6 kilograms. Her dog weighs 22 kilograms more than her cat. What is the total weight of her cat and dog?

The dog and cat weigh a total of 24 kg.

This is reasonable because the dog's weight is about 30 kg, and the cat's weight is 6 kg, 30 + 6 = 36 which is about 34 kg.

2. Darren studies for his science test for 39 minutes. He then does 6 chores. Each chore takes him 3 minutes. How many minutes does Darren spend studying and doing chores?

Darren spends a total of 57 minutes on studying and doing chores.

My answer is reasonable because 39 is about 40 and 18 is about 30, 40 + 20 = 60 minutes which is close to my answer of 57 minutes.

3. Mr. Abbot buys 8 boxes of granola bars for a party. Each box has 9 granola bars. After the party, there are 33 bars left. How many bars were eaten during the party?

My answer is reasonable because 70 - 40 is 30 which is close to my answer of 33.
4. Leslie weighs her marbles in a jar, and the scale reads 474 grams. The empty jar weighs 439 grams. Each marble weighs 5 grams. How many marbles are in the jar?

\[
\begin{align*}
\text{marbles + jar} &= 474 \text{ g} \\
\text{jar} &= 439 \text{ g} \\
5m &= 35 \text{ grams of marbles}.
\end{align*}
\]

\[
\begin{align*}
35 \div 5 &= 7 \\
\text{There are 7 marbles in the jar.}
\end{align*}
\]

My answer is reasonable because \(5 \times 7 = 35 \text{ g} + 439 \text{ g} = \text{total weight of the marbles and the jar of 474 g.}\)

5. Sharon uses 72 centimeters of ribbon to wrap gifts. Of that total, she uses 24 centimeters to wrap a big gift. She uses the remaining ribbon for 6 small gifts. How much ribbon will she use for each small gift if she uses the same amount on each?

\[
\begin{align*}
\text{72 cm total} \\
\text{24 cm for} \\
\text{big gift} \\
\text{48 cm left to wrap 6 small gifts.}
\end{align*}
\]

\[
\begin{align*}
48 \div 6 &= 8 \\
8 &= \text{cm for each of the 6 small gifts.}
\end{align*}
\]

My answer makes sense because \(6 \times 8 = 48 \text{ cm} + 20 \text{ cm} = 70 \text{ cm total used.}\)

6. Six friends equally share the cost of a gift. They pay $90 and receive $42 in change. How much does each friend pay?

\[
\begin{align*}
\text{8} \div 6 &= \text{dollars spent} \\
48 &= \text{dollars each friend spends on the gift.}
\end{align*}
\]

My answer makes sense because \(6 \times 8 = 48 \text{ plus the 40 they received in change adds back up to the$90 they pay for the gift.}\)
1. Use the disks to complete true number sentences.

   a. \[3 \text{ ones} \times 3 = \underline{9} \text{ ones}\]
   \[3 \times 3 = \underline{9}\]

   b. \[3 \text{ tens} \times 3 = \underline{9} \text{ tens}\]
   \[30 \times 3 = \underline{90}\]

2. Use the chart to complete true number sentences.

   \[
   \begin{array}{c|c}
   \text{tens} & \text{ones} \\
   \hline
   \cdot & \cdot \\
   \hline
   \end{array}
   \]

   a. \[2 \times 5 \text{ ones} = \underline{10} \text{ ones}\]
   \[2 \times 5 = \underline{10}\]

   b. \[2 \times 5 \text{ tens} = \underline{10} \text{ tens}\]
   \[2 \times 50 = \underline{100}\]

   \[
   \begin{array}{c|c}
   \text{tens} & \text{ones} \\
   \hline
   \cdot & \cdot \\
   \hline
   \end{array}
   \]

   c. \[5 \times 5 \text{ ones} = \underline{25} \text{ ones}\]
   \[5 \times 5 = \underline{25}\]

   d. \[5 \times 5 \text{ tens} = \underline{25} \text{ tens}\]
   \[5 \times 50 = \underline{250}\]
3. Match.

- $6 \times 2$
- $6 \text{ tens } \times 2$
- $7 \times 3$
- $7 \text{ tens } \times 3$
- $70 \times 5$
- $3 \times 90$

4. Each classroom has 30 desks. Use a tape diagram to find the total number of desks in 8 classrooms.

- 8 classrooms
  - 30
  - 30
  - 30
  - 30
  - 30
  - 30
  - 30

There are 240 desks in 8 classrooms.

$30 \times 8 = 240$
1. Use the chart to complete the equations. Then solve.

a. \((2 \times 5) \times 10\)
   \[= (10 \text{ ones}) \times 10\]
   \[= 100\]

b. \(2 \times (5 \times 10)\)
   \[= 2 \times (5 \text{ tens})\]
   \[= 100\]

c. \((4 \times 5) \times 10\)
   \[= (20 \text{ ones}) \times 10\]
   \[= 200\]

d. \(4 \times (5 \times 10)\)
   \[= 4 \times (5 \text{ tens})\]
   \[= 200\]
2. Solve. Place ( ) in (c) and (d) as needed to find the related fact.

   a. \[3 \times 20 = 3 \times (2 \times 10)\]
      \[= (3 \times 2) \times 10\]
      \[= 6 \times 10\]
      \[= 60\]

   b. \[3 \times 30 = 3 \times (3 \times 10)\]
      \[= (9 \times 3) \times 10\]
      \[= 9 \times 10\]
      \[= 90\]

3. Danny solves \(5 \times 20\) by thinking about \(10 \times 10\). Explain his strategy.

   \[5 \times 20 =\]
   \[5 \times 2 \times 10 =\]
   \[(5 \times 2) \times 10 =\]
   \[10 \times 10 =\]
   \[100\]

   Danny made the 20 into a 2\times10. Then put ( ) around the 5\times2 making another 10. Now the problem is 10\times10.
2. Ms. Lemus buys 7 boxes of snacks. Each box has 12 packets of fruit snacks and 18 packets of cashews. How many snacks did she buy altogether?

Ms. Lemus buys 210 snacks altogether.

3. Tamara wants to buy a tablet that costs $437. She saves $50 a month for 9 months. Does she have enough money to buy the tablet? Explain why or why not.

Yes, Tamara has enough to buy the tablet.

She will have $13 left.
4. Mr. Ramirez receives 4 sets of books. Each set has 16 fiction books and 14 non-fiction books. He puts 97 books in his library and donates the rest of his books. How many books does he donate?

\[ \begin{array}{c}
\text{b} = \text{total # of books} \\
30 & 30 & 30 & 30 \\
\_ & +14 & \_ & 30 \\
\_ & 120 \_ & 120
\end{array} \]

Mr. Ramirez donates 23 books.

5. Celia sells calendars for a fundraiser. Each calendar costs $9. She sells 16 calendars to her family members and 14 calendars to the people in her neighborhood. Her goal is to earn $300. Does Celia reach her goal? Explain your answer.

\[ \begin{array}{c}
\text{16 calendars} \\
\$9 \times 16 \\
\text{14 calendars} \\
\$9 \times 14 \\
\$144 + \$126 \\
\$270
\end{array} \]

Celia does not reach her goal of $300. She is $30 short.

6. The video store sells science and history movies for $5 each. How much money does the video store make if it sells 33 science movies and 57 history movies?

\[ \begin{array}{c}
\text{science} \\
53 \times 5 \\
\text{m} = 33 \times 5 \\
\text{m} = (30 \times 5) + (3 \times 5) \\
\text{m} = 150 + 15 \\
\text{m} = \$165
\end{array} \]

\[ \begin{array}{c}
\text{history} \\
57 \times 5 \\
\text{m} = 57 \times 5 \\
\text{m} = (50 \times 5) + (7 \times 5) \\
\text{m} = 250 + 35 \\
\text{m} = \$285
\end{array} \]

\[ \frac{285 + 165}{90} \times 5 = \$450 \]

The video store makes $450.