



First Name: _____	Last Name: _____	Grade: _____
Teacher: _____	Parent's email: _____	

Comparing Numbers

Welcome to the first Math Challenge. In this challenge, we explore situations when one number is the same as, smaller than, or larger than another number. We compare numbers regularly in our daily lives. For example, we compare daily temperature, prices of everyday items, height or weight of two or more people, etc. When two values are equal, we use the “equals” sign or “=”. When two values are not equal, we use a less than (<) or greater than (>) sign to compare them.

For this first Math Challenge, drawing diagrams and/or making an organized list may help to solve the problems. If you are new to any of the problem solving strategies, check out our complete overview of elementary problem-solving strategies at <https://www.mathinaction.org/problem-solving-strategies.html>.

Kinder & First Grade: solve at least 3 problems.
Second & Third Grade: solve at least 7 problems.
Fourth Grade and above: solve at least 12 problems.

	<i>Answer</i>
<p>1. In the picture below, there are only triangles, circles and squares. How many more squares than circles are there in the drawing below?</p> <div style="text-align: center;"> </div>	
<p>2. Jeanine read 2 picture books and 4 chapter books this week. Liza read two picture books and 5 chapter books this week. Roy read 3 picture books and 3 chapter books. Who read the most number of books?</p>	
<p>3. In the picture below there are only triangles, circles and squares. Logan marked all squares from the drawing below. Nicole marked all triangles and circles.</p> <div style="text-align: center;"> </div> <p>Who marked more shapes? By how many?</p>	
<p>4. Tom found six shells at the beach. Renata found twice as many. How many shells did Renata find?</p>	
<p>5. Laura has 3 fish tanks, each holding 4 fish. James has a total of 10 fish, all in one big fish tank. Who has more fish?</p>	

6.	<p>Melissa went to the candy store and grabbed a large bag to fill with candy. There were 5 jars of yummy candy. At the first jar, she took 2 pieces of candy and placed them in the bag. At the second jar, she put 4 pieces in the bag and at the third jar, she put 6 pieces in the bag. She continued in this pattern with the fourth and fifth jar. Timothy also visited all 5 jars. At the first jar, he took 1 piece of candy and placed it in the bag. At the second jar, he put 4 pieces in the bag. At the third jar, he put 7 pieces in the bag. He continued in this pattern with the fourth and fifth jar. In the end, how many more pieces of candy were in Timothy's bag than in Melissa's bag?</p>	
7.	<p>Sangeeta is currently more than 20 years old and less than 60 years old. We can count by 7's (starting at 7) to reach Sangeeta's current age. One year from now, we will be able to count by 5's (starting at 5) to reach her age. How old is Sangeeta right now?</p>	
8.	<p>A box contains some buttons. Four people estimate the number of buttons in the box. Their estimates were 127, 137, 124 and 145. Among the estimations, one was off by eleven, another deviated by three, a third was off by seven, and the final estimate missed the mark by ten. How many buttons were in the box?</p>	
9.	<p>Nicole loves playing fetch with her dog Zoe. Zoe always starts by sitting beside Nicole before Nicole throws the ball. When Nicole throws the ball, Zoe runs to it and brings back the ball to the same spot. Nicole throws the ball three times.</p> <ul style="list-style-type: none"> • The first time her throw was 8.5 yards away. • The second time she throws it, it was twice as far as the first time. • The third time she throws, it was 3 yards less than the second throw. <p>How far did Zoe run in total?</p>	
10.	<p>What is the greatest whole number that can be placed in each blank space to make the number sentences true?</p> <p>a. $4 \times \underline{\quad} < 35$</p> <p>b. $60 \times \underline{\quad} < 250$</p> <p>c. $7 \times \underline{\quad} < 500$</p> <p>d. $50 + \underline{\quad} \times 2 < 70$</p> <p>e. $81 \times 5 - \underline{\quad} > 360$</p> <p>f. $6 \times \underline{\quad} + 5 < 41$</p>	<p>a.</p> <p>b.</p> <p>c.</p> <p>d.</p> <p>e.</p> <p>f.</p>

11. Teacher Porter asked students to do 'Partition 5'. To do so, students split the number 5 in different ways according to the clue(s) given. Only positive numbers will be used.

For examples:

- The numbers on the outside are both twice the number in the center. Solution: $2+1+2$ $\square + \square + \square$

- The first number is even, all numbers are greater than 0. Solution: $2+1+1+1$ $\square + \square + \square + \square$

Find the solution to each Partition problems:

a. **Partition 34** $\square + \square + \square$ a.
 The first two numbers are the same and are multiples of five. The third number is less than five.

b. **Partition 34** $\square + \square + \square + \square$ b.
 The numbers form a sequence. Each number is five more than the previous number.

c. **Partition 55** $\square + \square + \square + \square$ c.
 The second number is twice the first. The third number is twice the second. The fourth number is the same as the third.

d. **Partition 55** $\square + \square + \square + \square + \square$ d.
 The numbers form a sequence. Each number is four more than the previous number.

12. The following table shows some information about some of the world's tallest birds. However, the table is incomplete. Use the following clues to complete the table.

- The Mute Swan is 55 cm shorter than the Southern Cassowary.
- The Wandering Albatross is 7 cm taller than the Mute Swan.
- The Ostrich is 1 m taller than the Andean Condor.
- The Southern Cassowary is 20 mm taller than the Emu.
- The Andean Condor is 18 cm taller than the King Penguin.
- The Marabou Stork is one and a half times the height of the Mute Swan.

Rank the birds from shortest to tallest.

Birds	Average Heights (in cm)
Andean Condor	
Emu	
King Penguin	92
Mute Swan	
Ostrich	
Southern Cassowary	155
Wandering Albatross	
Dalmatian Pelican	175
Marabou Stork	

17. a. If Y is twice as big as X and Z is twice as big as Y, find the value of X, Y, and Z.

$$X + Y + Z = 560$$

a. $X =$

$Y =$

$Z =$

b. If T is 30 more than S and U is three times T, find the value of S, T, and U.

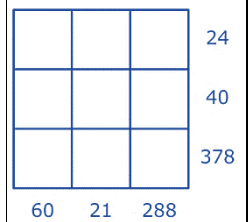
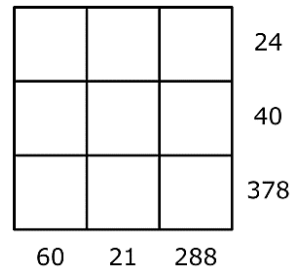
$$S - T + U = 330$$

b. $S =$

$T =$

$U =$

18. Sherry placed the number cards 1 to 9 in a 3 by 3 grid. She then multiplied together all the numbers in each row and wrote the resulting product next to that row. She also multiplied the numbers in each column together and wrote the product under that column. She then removed all cards. Find how Sherry placed each card on the grid.



Solution is available on October 6, 2023

www.mathinaction.org