

# Math Challenge #6





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

## All that sweets

**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.**

*Answer*

<p>1. There was a plate on the table that contained only cookies and brownies. There were 2 chocolate chips cookies, 3 oatmeal cookies, and dark chocolate brownies. If there were 8 items on the plate, how many brownies were on the plate? <math>8 - 2 - 3 = 3</math></p>	<p><i>3 [dark chocolate brownies]</i></p>
<p>2. There are chocolate chip cookies, peanut butter cookies, and oatmeal cookies on a tray. Dana can pick 2 cookies from the tray. How many two-cookies combinations can she pick from the tray?          Hint: make an organized list.          2 chocolate chip cookies          2 peanut butter cookies          2 oatmeal cookies          A chocolate chip cookie and a peanut butter cookie          A chocolate chip cookie and an oatmeal cookie          A peanut butter cookie and an oatmeal cookie</p>	<p><i>6 [combinations]</i></p>
<p>3. Each cookie is \$1 and each brownie is \$2. Liza bought one cookie and two brownies. How much did she have to pay? <math>\\$1 + \\$2 + \\$2 = \\$5</math></p> <div style="text-align: center;">  </div>	<p><i>\$5</i></p>
<p>4. At the same store where Liza bought the cookie and brownies, Sasha bought 10 cookies and 10 brownies. How much did he have to pay?</p>	<p><i>\$30</i></p>
<p>5. The baker broke each of the cookies in half. She counted 6 broken halves. How many whole cookies did the baker start with?</p>	<p><i>3 [whole cookies]</i></p>
<p>6. Tony baked cookies, cupcakes, and lemon bars for the baking sale at his school. She made 30 chocolate chips cookies, 26 oatmeal cookies, 24 chocolate cupcakes, and 22 vanilla cupcakes. If the total number of baked goods is 120, how many lemon bars did Tony bake?  <math>120 - (30 + 26 + 24 + 22) = 18</math> lemon bars</p> <div style="text-align: center;">  </div>	<p><i>18 [lemon bars]</i></p>

7. The Girl Scouts are having their annual cookie sale. Emily sells 5 boxes of cookies each day. After 7 days, Emily still has 18 boxes left to sell. How many boxes of cookies did Emily have at first?  
 $7 \times 5 + 18 = 53$  boxes




53 [boxes]

8. All day, Jeremy and Sarah baked cookies and cupcakes for the baking sale at their school. They made 3 dozen chocolate chips cookies and 2 dozen oatmeal cookies. If the total number of baked goods is three times the number of cookies, how many cupcakes did Jeremy and Sarah bake?  
 The number of cookies: 5 dozen =  $5 \times 12 = 60$  cookies. Total of baked goods is  $60 \times 3 = 180$ . The number of cupcakes must be:  $180 - 60 = 120$  cupcakes.

120 [cupcakes]

9. The Bakery has 4 separate large boxes, and inside each large box there are three separate small boxes, and inside each of these small boxes there are 2 separate smaller boxes filled with small cookies. How many boxes, counting all sizes, are there all together? Hint: Make an organized list or draw it out.  
 Create an organized list or draw the boxes.




Large boxes: 4 (blue)  
 Medium boxes:  $3 \times 4 = 12$  (green)  
 Small boxes:  $2 \times 3 \times 4 = 24$  (with cookies inside)

Total =  $4 + 12 + 24 = 40$  boxes

40 [boxes]

10. Kathy had fun baking lots of gingerbread cookies. She left them on a plate to cool while she went shopping with her dad. Her brother saw the gingerbread cookies and took  $\frac{1}{2}$  of them to his Scout meeting. Her sister took  $\frac{2}{3}$  of the remaining cookies to share with her friends. Finally, her mom took  $\frac{1}{2}$  of the remaining cookies to her Book Club meeting. When Kathy and her dad got home, there were only 5 cookies left on the plate. How many gingerbread cookies had Kathy baked?  
 Hint: work backward  
 5 cookies mom took + 5 left, it makes  $\frac{1}{3}$   
 Half was  $3 \times 10 = 30$   
 Kathy baked 60 gingerbread cookies




60 [gingerbread cookies]

11. At a snack stand, a cookie and a rice crispy treat cost \$2.50, a rice crispy treat and a brownie cost \$2.80, and a brownie and a cookie cost \$3.00. Alex paid with a \$5 bill to buy a cookie, a rice crispy treat, and a brownie. How much change will he get from the cashier?  
 Notice that if you combined all information:  
 2 cookies + 2 rice crispy treats + 2 brownies cost  $\$2.50 + \$2.80 + \$3.00 = \$8.30$ .  
 Therefore 1 cookie + 1 rice crispy treat + 1 brownie cost  $\$8.30 \div 2 = \$4.15$ .  
 The change he will get from the cashier =  $\$5.00 - \$4.15 = \$0.85$

\$0.85 or 85 cents

12. Cameron has a large jar of cookies and he wants to share them with his friends. He brings half of what he has to his art club meeting. He then gives half of what's left to his buddy, Jayden. Next, he gives half of what's left to Laina. His mom makes him give 5 cookies to his sister. He now has 10 cookies left. How many cookies did he start with?



Hint: work backward  
 Laina's share + sister + what's left = 30 cookies  
 Jayden + the previous step = 60 cookies  
 Art club + previous step = 120 cookies at first in the jar

*120 [cookies]*

13. Jack baked  $5\frac{1}{4}$  dozen peanut butter cookies and  $4\frac{5}{6}$  dozen oatmeal cookies for a bake sale. Find the actual number of cookies he baked.

$5\frac{1}{4}$  dozen = 63 peanut butter  
 $4\frac{5}{6}$  dozen = 58 oatmeal cookies  
 Total = 63 + 58 = 121

*121*

14. Lindsey has 48 chocolate chip cookies to put in bags for the bake sale. How many different numbers of bags can she fill if she puts the same number of cookies and she packs all of them? She puts at least 2 cookies in each bag.

Hint: find all possibilities.  
 She can put them in bags of 2, 3, 4, 6, 8, 12, 16, 24 and 48. Thus, there are 9 different numbers of bags.

*9*

15. Mr. Bianchi ate 100 cookies in 5 days. Each day he ate 6 more than the day before. How many cookies did he eat on the first day?

**One way: Finding average.**  
 We can determine first how many he would have to eat each day on average.  $100 \div 5 = 20$ . We can use 20 as the middle day (day 3), then add or subtract cookies on the other days.

**Another way to solve: Model drawing**


1 <sup>st</sup> day		}	100
2 <sup>nd</sup> day	6		
3 <sup>rd</sup> day	6 6		
4 <sup>th</sup> day	6 6 6		
5 <sup>th</sup> day	6 6 6 6		

$100 - (60 \text{ additional cookies}) = 40$   
 $40/5 = 8$  cookies to start with

**Another way to solve: Algebraic way.**  
 Let  $x$  = the number of cookies on Day 1. Then  $x + 6$  would be the number he ate on Day 2,  $x + 6 + 6$  would be the number of cookies he ate on Day 3, and so on.  
 Therefore:  $x + (x + 6) + (x + 6 + 6) + (x + 6 + 6 + 6) + (x + 6 + 6 + 6 + 6) = 100$   
 $5x + 60 = 100$   
 $5x = 40$   
 $x = 8$

*8 [cookies]*

16. For a bake sale, Ron baked 48 chocolate chip cookies and 64 oatmeal cookies. He would like to package them in bags. He plans to use all the cookies and wants to include an equal number of chocolate chip cookies and an equal number of oatmeal cookies in each bag. What is the largest number of bags he can make with an equal number of chocolate chip cookies and an equal number of oatmeal cookies in each bag?



Number of bags	1	2	4	8	16
Number of CC cookies in each bag	48	24	12	6	3
Number of Oatmeal cookies in each bag	64	32	16	8	4

Or find the greatest common factor of 48 and 64  $GCF(48, 64) = 16$ . So there will be 16 bags with  $48/16 = 3$  chocolate chip cookies and  $64/16 = 4$  oatmeal cookies

*16 [bags]*

17. Anita, Quentin, and Maria are baking cookies together. They need  $\frac{3}{4}$  cup of flour and  $\frac{1}{3}$  cup of butter to make a dozen cookies. They each brought the ingredients they had at home. Anita brought 2 cups of flour and  $\frac{1}{4}$  cup of butter, Quentin brought 1 cup of flour and  $\frac{1}{2}$  cup of butter, and Maria brought  $1\frac{1}{4}$  cups of flour and  $\frac{3}{4}$  cup of butter. If the students have plenty of the other ingredients they need (sugar, salt, baking soda, etc.), how many whole batches of a dozen cookies can they make?

4 [batches]

The children brought  $2+1+1\frac{1}{4}=4\frac{1}{4}$  cups of flour and  $\frac{1}{4}+\frac{1}{2}+\frac{3}{4}=1\frac{1}{2}$  cups of butter.

They have enough flour for:  $4\frac{1}{4} \div \frac{3}{4} = \frac{17}{4} \times \frac{4}{3} = \frac{17}{3} = 5\frac{2}{3}$  batches

and they have enough butter for  $1\frac{1}{2} \div \frac{1}{3} = \frac{3}{2} \times \frac{3}{1} = \frac{9}{2} = 4\frac{1}{2}$  batches

The butter is the limiting factor in this case. Thus, they can only make 4 whole batches of a dozen cookies.

18. At a bake sale, a student spent \$11.00 buying 3 brownies and 5 cookies. His friend spent \$3.95 buying 1 brownie and 2 cookies. What is the price of a brownie?

\$2.25

$$\begin{array}{l}
 \text{3 brownies} + \text{5 cookies} = \$11.00 \\
 \text{1 brownie} + \text{2 cookies} = \$3.95
 \end{array}$$

Looking at the second picture above, you would find that:

2 brownies and 4 cookies cost \$7.90

3 brownies and 6 cookies cost \$11.85 – Notice that the difference of this and the first picture is **1 cookie**, which cost  $\$11.85 - \$11.00 = \$0.85$

Since the price of a cookie is \$0.85, then the price of a brownie is  $\$3.95 - (2 \times 0.85) = \$2.25$

Solution is available on January 8th, 2021 at [www.mathinaction.org](http://www.mathinaction.org)