



## Skip Counting

Welcome to the Math Challenge #8. In this challenge, we **skip count** and solve problems involving **multiples** and **factors**. When we learn our times tables, we are learning multiples. For examples, 2, 4, 6, 8 and 10 are multiples of 2. While multiples are what we get after multiplying the number by another number, factors are what we can multiply to get the number. For example, 1 and 6 are factors of 6 ( $1 \times 6 = 6$ ), 2 and 3 are also factors of 6 ( $2 \times 3 = 6$ ). Let's work on these problems. Don't forget to ask an adult for help if you are stuck. You may print a 100-chart (page 3) to help you solve some of the problems. Good luck!

**Kinder & First Grade: solve at least 3 problems.**  
**Second & Third Grade: solve at least 6 problems.**  
**Fourth Grade and above: solve at least 12 problems.**

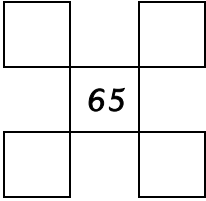
*Answer*

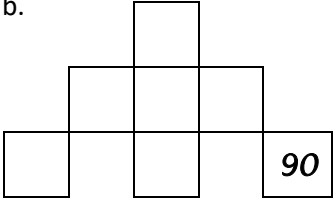
1.	Tina counts by two starting with the number 10. What would be the 5 <sup>th</sup> number she says?	18																																																																																																																													
2.	If you skip-count by 10's to 100, starting with the number 10, how many numbers would you say?	10																																																																																																																													
3.	Maya skip-counts by 5 starting with 5. What would be the 5 <sup>th</sup> number she says?	25																																																																																																																													
4.	Mira skip-counts by 3 starting with 3 and stops at 21. Ria skip-counts by 4 and stops at 20. Will they ever say the same number? If yes, what is the number?	Yes, 12																																																																																																																													
5.	Fill in the blanks to continue each pattern: a. 9, 17, 25, 33, _____, _____, _____, ... b. 3, 7, 11, 15, _____, _____, _____, ... c. 29, 36, 43, 50, _____, _____, _____, ...	a. 41, 49, 57 b. 19, 23, 27 c. 57, 64, 71																																																																																																																													
6.	Shade in all multiples of 3: <table border="1" style="display: inline-table; margin-right: 20px;"> <tr><td>12</td><td>9</td><td>33</td><td>6</td><td>15</td></tr> <tr><td>18</td><td>16</td><td>2</td><td>4</td><td>50</td></tr> <tr><td>30</td><td>42</td><td>24</td><td>45</td><td>48</td></tr> <tr><td>28</td><td>7</td><td>8</td><td>10</td><td>27</td></tr> <tr><td>36</td><td>18</td><td>21</td><td>6</td><td>51</td></tr> </table> Shade in all multiples of 4: <table border="1" style="display: inline-table; margin-right: 20px;"> <tr><td>20</td><td>41</td><td>10</td><td>23</td><td>16</td></tr> <tr><td>12</td><td>36</td><td>15</td><td>24</td><td>48</td></tr> <tr><td>36</td><td>25</td><td>8</td><td>13</td><td>32</td></tr> <tr><td>4</td><td>14</td><td>50</td><td>35</td><td>80</td></tr> <tr><td>40</td><td>39</td><td>26</td><td>5</td><td>16</td></tr> </table> Shade in all multiples of 5: <table border="1" style="display: inline-table; margin-right: 20px;"> <tr><td>12</td><td>16</td><td>50</td><td>18</td><td>21</td></tr> <tr><td>43</td><td>34</td><td>15</td><td>62</td><td>32</td></tr> <tr><td>8</td><td>14</td><td>25</td><td>37</td><td>18</td></tr> <tr><td>52</td><td>39</td><td>45</td><td>52</td><td>24</td></tr> <tr><td>31</td><td>44</td><td>30</td><td>23</td><td>36</td></tr> </table> Shade in all multiples of 6: <table border="1" style="display: inline-table; margin-right: 20px;"> <tr><td>20</td><td>12</td><td>33</td><td>32</td><td>15</td></tr> <tr><td>14</td><td>24</td><td>2</td><td>4</td><td>50</td></tr> <tr><td>26</td><td>48</td><td>21</td><td>45</td><td>40</td></tr> <tr><td>62</td><td>60</td><td>8</td><td>10</td><td>27</td></tr> <tr><td>16</td><td>36</td><td>18</td><td>66</td><td>6</td></tr> </table> Shade in all multiples of 10: <table border="1" style="display: inline-table;"> <tr><td>20</td><td>10</td><td>30</td><td>70</td><td>15</td></tr> <tr><td>50</td><td>24</td><td>26</td><td>41</td><td>54</td></tr> <tr><td>40</td><td>80</td><td>60</td><td>54</td><td>4</td></tr> <tr><td>10</td><td>65</td><td>5</td><td>29</td><td>27</td></tr> <tr><td>80</td><td>60</td><td>90</td><td>50</td><td>6</td></tr> </table>	12	9	33	6	15	18	16	2	4	50	30	42	24	45	48	28	7	8	10	27	36	18	21	6	51	20	41	10	23	16	12	36	15	24	48	36	25	8	13	32	4	14	50	35	80	40	39	26	5	16	12	16	50	18	21	43	34	15	62	32	8	14	25	37	18	52	39	45	52	24	31	44	30	23	36	20	12	33	32	15	14	24	2	4	50	26	48	21	45	40	62	60	8	10	27	16	36	18	66	6	20	10	30	70	15	50	24	26	41	54	40	80	60	54	4	10	65	5	29	27	80	60	90	50	6	SMILE
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The shaded boxes spell out a word that you should do every day. What is the word?																																																																																																																															
<b>You may use (if you think you need) the 100-chart on page 3 to help you solve problems 7, 8, 9 and 10.</b>																																																																																																																															
7.	a. When Emma shades the multiples of a number in her 100-chart, she shades exactly 33 numbers, including 18, 33, and 90. What is Emma's number? <b>The common factor of 18, 33, 90 is 3.</b> b. When Eugene shades the multiple of a number in his 100-chart, he shades exactly 2 numbers in the 30's. He also shades 42. What is Eugene's number? <b>42=6×7, only 6 has 2 multiples in the 30's: 30, and 36</b>	a. 3 b. 6																																																																																																																													

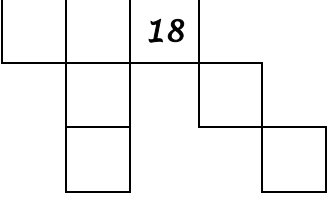
8. Between 70 and 100 students will attend the Math Challenge tournament at the Bee Elementary. If seated in rows of 7, there will be 1 extra student. If seated in rows of 11, there will be no extra students. How many students will attend the tournament? *The number of students is a multiple of 11. Checking numbers 77, 88 and 99. Only 99 works, as  $99 \div 7 = 14 R 1$*


99


9. The following figures are parts of the 100-chart. Try to solve these problems without using the 100-chart. What are the missing numbers on the following figures:


a. 

b. 

c. 

a. 

b. 

c. 

10. Chris skip-counts by 9. The first number he says is 9. Alex skip-counts by 4. The first number he says is 4. What is the smallest number greater than 60 that Chris and Alex both say? *Making the organized list of the multiples above 60, we'll find that 72 works.*

72

11. One bell rings every 4 minutes and another bell rings every 5 minutes. Both bells ring together at 1 p.m. When is the first time both bells will ring together again after 2 p.m.? *First bell: 4, 8, 12, 16, 20, 24, ...  
Second bell: 5, 10, 15, 20, 25, ...  
Both bells will ring together every 20 min (1:20 pm, 1:40 pm, 2:00 pm, 2:20 pm).*

2:20 p.m.

12. When Diana shades the multiples of a number in her 100-chart, she shades exactly 8 numbers. What is Diana's number? *If there are only 8 multiples of this number in a chart, it means the number is greater than 10 and less than 15. Try and error will lead us to 12.*

12

13. The number of students in ACE Math School can be arranged in rows of 12, 16 or 20 without any student left. What is the least number of students at ACE Math School? *Find the LCM of (12,16,20) =  $2^4 \times 3 \times 5 = 240$  students,  $12 = 2^2 \times 3$ ,  $16 = 2^4$ ,  $20 = 2^2 \times 5$*

240 [students]

14. A number is 3 more than a multiple of 4, and 4 more than a multiple of 5. What is the least number it could be? *Multiples of  $4 + 3$ : 7, 11, 15, 19, 23  
Multiples of  $5 + 4$ : 9, 14, 19, 24  
19 is the least common number*

19

15. Dhruv counted to 2400 by 6's beginning with 6. Max counted to 2400 by 4's starting with 4. How many of the numbers counted by Dhruv were also counted by Max? *Find the LCM of (6,4) = 12, and  $2400 \div 12 = 200$*

200

16. The number of stairs between consecutive floors at Kirkland Resort is always the same. There are 207 stairs between the bottom floor and the pool floor, and there are 368 stairs between the bottom floor and the top floor. If the bottom floor is floor 1, then what is the floor number assigned to the pool floor? *The number of floor is a factor of both 207 and 368.  $207 = 3^2 \times 23$ ,  $368 = 2^4 \times 23$ . Every integer has 1 as a factor, so the common factors of 207 and 368 are 1 and 23. But it is unreasonably to have 1 stair between the floors.  
Then  $207 \div 23 = 9$  sets of stairs between the floor 1 and the pool floor. Each set of stairs goes 1 floor, so the pool is on the  $1+9 = 10^{\text{th}}$  floor*

10<sup>th</sup> [floor] or Floor 10

*Solution is available on 02/01/2019 at [www.mathinaction.org](http://www.mathinaction.org)*

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
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