

# “Math is Cool” Championships -- 2020-21

## 4<sup>th</sup> Grade

### Mental Math Solutions

	<b>Answer</b>	<b>Solution</b>
<b>1</b>	16	What is the sum of eleven and five? $11+5$
<b>2</b>	8 [sides]	How many sides does an octagon have?  Definition of an octagon.
<b>3</b>	25 [minutes]	How many minutes are there between 3:50 PM and 4:15 PM on the same day?  $4:15 - 3:50$
<b>4</b>	48	What is the next number in the following sequence? 3, 6, 12, 24...  Doubling each number
<b>5</b>	6	What is 20% of 30?  $10\% = 3$ $20\% = 6$
<b>6</b>	21	If two-thirds of my number is equal to 14, what is my number?  $1/3$ would be 7, so the number is $14+7 = 21$
<b>7</b>	28 [miles]	Biff can ride a bike at 13 miles per hour. Eho can ride a bike at 17 miles per hour. If they start at the same time and place, going the same direction, how many miles apart will they be after 7 hours?  Eho rides 4 miles per hour faster, so after 7 hours, he is 28 miles ahead.
<b>8</b>	25	What is two to the 4 <sup>th</sup> power plus 3 to the 2 <sup>nd</sup> power?  $16+9 = 25$

# “Math is Cool” Championships -- 2020-21

## 4<sup>th</sup> Grade

### Individual Test Solutions

	<b>Answer</b>	<b>Solution</b>
<b>1</b>	322	What is the largest number in the following list: 79, 102, 322, 99, 250
<b>2</b>	72	What is the sum of 64 and 8? $64+8=72$
<b>3</b>	7	$8 \times \underline{\quad} = 56$ What number belongs in the blank? $8*7=56$
<b>4</b>	2	What digit is in the tens place? 845,621.073
<b>5</b>	4	How many sides does a quadrilateral have?
<b>6</b>	1	How many lines of symmetry does this shape have? 
<b>7</b>	564301	Write this out as a single multi-digit number: five hundred sixty-four thousand, three hundred one. (Do not use a comma when entering your answer.)
<b>8</b>	10 [cm]	A regular pentagon has sides of length 2 cm. What is the length of the perimeter in cm? $5*2$
<b>9</b>	2021	What is 2,900 minus 879?
<b>10</b>	0	What is the product when you multiply all the digits of 740.258? $7*4*0*2*5*8 = 0$
<b>11</b>	2	What is the remainder when 522 is divided by 8? $522/8 = 65 \text{ R } 2$

<b>12</b>	17 [minutes]	How many minutes will have passed from the time shown on the clock to 3:52 PM on the same afternoon?  3:52 - 3:35 = 17 minutes
<b>13</b>	2	What is the numerator when you completely reduce the fraction $10/15$ ? $10/15 = 2/3$
<b>14</b>	2000	What is 2021 rounded to the nearest 100?
<b>15</b>	1	Today is Wednesday. What day will it be 12 days after yesterday? Enter an integer as your answer, according to the following code: 1 = Sunday, 2 = Monday, 3 = Tuesday, 4 = Wednesday, 5 = Thursday, 6 = Friday, or 7 = Saturday.  12 days after Tuesday is 2 days less than 2 weeks. Back 2 days is Sunday.
<b>16</b>	37	What is the next prime number greater than 31?
<b>17</b>	42	What is the sum of the first three multiples of 7? $7+14+21$
<b>18</b>	[\$]5000	How many dollars is 50,000 dimes? $50,000/10 = 5000$
<b>19</b>	255 [minutes]	Izela is doing a science experiment that requires her to let the experiment cool for $4\frac{1}{4}$ hours. How many minutes is this? $4*60 + 60/4 = 240+15 = 255$
<b>20</b>	6 [beyblades]	Edwin is sorting his Beyblades. He has 3 blue ones, 4 red ones, and 5 silver ones. If he shares his Beyblades evenly with his neighbor, how many will Edwin have left? $(3+4+5)/2 = 12/2 = 6$

<b>21</b>	20 [weeks]	Easton claims that he grows $\frac{3}{4}$ of an inch per week. At this rate, how many weeks will it take him to grow 15 inches?  $15 \div \frac{3}{4} = 15 \times \frac{4}{3} = \frac{60}{3} = 20$
<b>22</b>	3	What is the biggest counting number that can be put in the blank and the inequality will still be true?  $8 + 3 + \underline{\quad} < 15$ $8 + 3 + 3 < 15$ $14 < 15$
<b>23</b>	[\$]14	Alejandro buys a birthday present for his best friend and pays for it with a \$20 bill. The cashier gives him back 3 one-dollar bills, 6 quarters, 12 dimes, 4 nickels and 10 pennies. How much did the birthday gift cost in dollars?  $=20-(3+6*0.25+12*0.10+4*0.05 + 10*0.01) = ???$ $=20-(3+1.50+1.20+0.20 + 0.01) = 20-6 = 14$
<b>24</b>	72	What is the sum of all the positive whole number factors of 51?  $1+51+3+17$
<b>25</b>	6	What is $\frac{4}{3} \div \frac{2}{9}$ ?  $\frac{4}{3} \div \frac{2}{9} = \frac{4}{3} \times \frac{9}{2} = \frac{36}{6} = 6$
<b>26</b>	368 [times]	When Justine plays Among Us, she is an imposter 20% of the time and the rest of the time, she is not an imposter. If she played the game 460 times last year, how many times was she NOT an imposter?  $2*10\% = 2*46 = 92 \text{ times as an imposter}$ $460-92 = 368 \text{ times not an imposter}$ Or $8*10\% = 8*46 = 368$
<b>27</b>	[\$]80	Lauren is selling face masks. It costs her \$3 in materials for each mask and she sells them for \$7 each. After selling 20 masks, how many dollars has she made as a profit after deducting the cost of supplies?  $(7-3)*20 = \$80$

<b>28</b>	120 [ways]	How many ways can you rearrange the letters in the word COVID?  5*4*3*2*1
<b>29</b>	2102	What is the next year that will use the same four digits as the year "two thousand twenty one"?  2021→2102 You want to rearrange the smallest place value possible while still making a larger number 2012 is in the past, so we move to the hundreds place and change the 0 for the next closest number available.
<b>30</b>	29	Two numbers have a sum of 36 and a difference of 22. What is the larger of the two numbers?  The numbers are 29 and 7.
<b>31</b>	14	Solve for x: $2x + 13 = 41$  $2x = 28 \rightarrow x = 14$
<b>32</b>	12 [cm]	A rectangle has an area of 60 sq. cm and a perimeter of 34 cm. How many centimeters is the longest side of the rectangle?  Dimensions have to be 5x12 to satisfy the conditions. The larger side is 12. You could use a system of equations, but most students would probably guess and adjust.
<b>33</b>	12	A new mathematical symbol @ is defined such that $a@b = 2a - b$ . What would $9@6$ equal?  $(9*2-6) = (18-6) = 12$
<b>34</b>	1	When $9^{10}$ is multiplied out, what digit is in the ones place?  Follows the pattern 9, 1, 9, 1, etc. 10 is an even number, so the ones digit will be a 1.
<b>35</b>	60 [cookies]	Kate has 6 boxes and some number of cookies. Whether she decides to use 2, 3, 4, 5, or 6 boxes to divide the cookies, Kate can always divide her cookies equally between the boxes. What is the minimum number of cookies Kate could have?  The smallest common multiple of 1, 2, 3, 4, 5, and 6 = 60

<b>36</b>	[\$] 27	<p>I have \$100. First, I gave 40% of my money to Evie. Then, I gave 50% of my remaining money to Rithani. Finally, I kept 10% of what was left, and gave the rest to Andra. How many dollars did Andra receive?</p> $100 - 40 = 60$ $60 - 30 = 30$ $30 - 3 = 27$
<b>37</b>	3 [unicorns]	<p>Hagrid brought unicorns and 3-headed dogs to his Care of Magical Creatures class. If there were a total of 18 heads and 32 feet on the creatures Hagrid brought, how many unicorns are there?</p> <p><math>32 \text{ feet}/4 = \text{total of 8 animals}</math>.      18 heads means most are dogs.      If all were dogs, there would be 24 heads, which is 6 more than we have. Turning a dog into a unicorn reduces heads by 2, so we need to turn 3 dogs into unicorns <math>\rightarrow</math> 5 dogs, and 3 unicorns.</p>
<b>38</b>	1060 [sq. cm.]	<p>Dane has a rectangular treasure box that he wants to decorate by covering all the outside surfaces with paper. What is the total surface area of paper in square centimeters that he would need to cover a box with dimensions 8 cm, 10 cm, and 25 cm.</p> $2*(8*10)=160$ $2*(10*25)=500$ $2*(8*25) = 400$ $160+500+400 = 1060$
<b>39</b>	113 [minutes]	<p>To prepare for a Hawaiian luau, you need to cook a Kalua pig in the ground for 6 minutes for each pound that it weighs. You begin cooking a 97 pound pig at 5:15 AM. The luau is scheduled to start at 4:50 pm. How many minutes are there between the time the pig will be finished cooking and the start of the luau?</p> $97*6 = 582 \text{ minutes to cook}$ $582/60 = 9 \text{ hours and } 42 \text{ minutes to cook}$ $5:15 + 9:42 = 2:57 \text{ pm}$ $4:50 \text{ pm} - 2:57 \text{ pm} = 1 \text{ hr } 53 \text{ minutes} = 60+53 = 113$

**40**

[Knight] 46

King Arthur had a circular 52-person table built. The table can seat King Arthur and his 51 knights equally spaced at 6 feet apart for social distancing. Each knight wears a mask with his seat number and King Arthur takes mask and seat number 1. The seats are numbered sequentially 1 through 52. Which mask number will the knight sitting in seat number 20 see directly across the table from him?

Half of 52 is 26, so knight #27 is across from King Arthur.  
 $27+19 = 46$

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## 4<sup>th</sup> Grade

### Multiple Choice Solutions

	<b>Answer</b>	<b>Solution</b>
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USE THE FOLLOWING INFORMATION TO SOLVE PROBLEMS #1 THROUGH #6.

<b>Math-a-Mask Emporium Prices</b>		
Mask Theme	Cost bought separately	Cost as a pack
Solid Color	\$11.00	4 for \$35.00
Flowers	\$12.00	3 for \$31.50
Math equations	\$12.50	4 for \$42.00
Sports Team	\$15.00	5 for \$85.00
Double Sided	\$17.00	6 for \$69.00
Designer Label	\$20.00	2 for \$30.00

<b>1</b>	A	What is the difference in dollars between the cheapest mask and the most expensive mask when purchased separately?  A) \$9.00    B) \$8.50    C) \$10.00    D) \$10.50 E) Answer not given.  $20-11 = \$9$
<b>2</b>	E [35 masks]	Fumiko bought 1 pack of sports team masks, 3 packs of double-sided masks, and 3 packs of math masks. How many masks did she buy in total?  A) 40 masks    B) 25 masks    C) 20 masks D) 15 masks    E) Answer not given.  $1*5+3*6+3*4 = 5+18+12=35$

3	D	<p>Lillian bought two flowered masks, one sports team mask, and 3 solid color masks. How much did Lillian spend?</p> <p>A) \$39      B) \$50      C) \$64      D) \$72  E) Answer not given.</p> $2*12+15+3*11 = 24+15+33 = 72$
4	A	<p>Jose purchased one pack of designer masks and one math equation mask. He paid with a \$50 bill. How much money did Jose receive in change?</p> <p>A) \$7.50      B) \$8.50      C) \$19.50      D) \$42.50  E) Answer not given.</p> $50-(30.00+12.50) = 50-42.50 = 7.50$
5	C	<p>Which mask pack gives the biggest discount per mask compared to the same type sold separately?</p> <p>A) Solid Color    B) Flowers    C) Double-Sided  D) Designer Label    E) Answer not given.</p> <p>Discount for double sided mask is \$5.50 per mask. As a pack they are \$11.50 each compared to \$17 each on their own.</p>
6	B	<p>During the Mathemagic Mask Sale all single masks are 20% off and mask packs are 30% off. How much in dollars would 8 Math Equation masks and one double sided mask cost if purchased in the cheapest way possible during the sale?</p> <p>A) \$70.70      B) \$72.40      C) \$90.90      D) \$93.60  E) Answer not given.</p> <p>8 Math masks = <math>(2*42)*0.7 = 84*0.7 = 58.80</math></p> <p>1 double-sided = <math>17*0.8 = 13.6</math></p> <p><math>13.60+58.80 = \\$72.40</math></p>

USE THE FOLLOWING INFORMATION TO SOLVE PROBLEMS #7 THROUGH #10.

## 10 Largest California Wildfires in History

Size Rank	Name of Fire	Thousands of Acres Burned	Year of Fire
1	August Complex	1030	2020
2	Mendocino Complex	460	2018
3	SCU Lightning Complex	400	2020
4	Creek	380	2020
5	LNU Lightning Complex	360	2020
6	North Complex	320	2020
7	Thomas	280	2017
8	Cedar	270	2003
9	Rush	270	2012
10	Rim	?	2013

7	B	<p>What percent of the ten largest California wildfires occurred during the year 2020?</p> <p>A) 10%    B) 50%    C) 60%    D) 90%    E) Answer not given.</p> <p><math>5/10 * 100 = 50\%</math></p>
8	D	<p>Rounded to the nearest ten-thousand, what is the average number of acres burned in the 5 largest California wildfires that occurred in the year 2020?</p> <p>A) 380 thousand acres    B) 410 thousand acres      C) 480 thousand acres    D) 500 thousand acres      E) Answer not given.</p> <p><math>= (1030 + 400 + 380 + 360 + 320) / 5</math>  <math>= 2490 / 5 = 498 (\times 1000) = 498,000</math> rounds to 500,000 when rounded to the nearest 10,000      (Note: Mendocino fire is skipped because it did not occur in 2020.)</p>

9	A	<p>Rounded to the nearest ten-thousand, the average of the 5 smallest fires on the list is 280 thousand acres burned. How many acres were burned in the Rim Fire of 2013?</p> <p>A) 260 thousand acres      B) 250 thousand acres      C) 230 thousand acres      D) 200 thousand acres      E) Answer not given.</p> <p>Total for the four known fires = <math>320+280+270+270 = 1,080</math> thousand      Total for five fires is <math>280,000 \times 5 = 1,400,000</math>      Rim Fire = <math>1,400,000 - 1,080,000 = 260,000</math></p>
10	C	<p>Besides the 2020 fires listed in the table, an <u>additional 1,870 thousand acres</u> burned in California in the year 2020 that are not included in the table. The size ratio of the <b>2020 California</b> wildfires to the 2019/20 Australian fires is 4:11. Using this ratio, approximately how many acres burned in Australia during the 2019/20 fire season, rounded to the nearest ten-thousand?</p> <p>A) 10 thousand acres      B) 12,000 thousand acres      C) 11,990 thousand acres      D) 12,400 thousand acres      E) Answer not given.</p> <p>CA:AUS = 4:11  <math>1,870 + 1,030 + 400 + 380 + 360 + 320 = 4360</math>      Apply ratio  <math>(4360/4) \times 11 = AUS = 11,990</math> thousand acres</p>

# “Math is Cool” Championships -- 2020-21

## 4<sup>th</sup> Grade

### Team Test Solutions

	<b>Answer</b>	<b>Solution</b>
<b>1</b>	586 [snowballs]	Walker and ten of his closest friends are having a snowball fight on New Year's Day. They have prepared 6446 snowballs to share equally among the 11 children. How many snowballs will each child get to throw?  $=6446/11 = 586$
<b>2</b>	21 [people]	Emily, who is COVID positive, exposed three classmates at a Valentine's Day party. Each of those classmates exposed seven family members. How many total people were exposed to COVID by Emily (not counting Emily)?  $3*7 = 21$
<b>3</b>	7 [eggs]	Biff and Eho are preparing for the Mathville Annual Easter Egg Hunt. They have a bin with 500 Easter eggs. There are at least 20 of each of the following colors of eggs: red, orange, yellow, green, blue, and purple. If Biff reaches in blindfolded, how many eggs does he need to pull out to be guaranteed to have two eggs that are the same color?  There are 6 different colors of eggs, so there need to be at least 7 pulled out to be sure of having a match.
<b>4</b>	88 [trips]	Limin is practicing for the annual 4 <sup>th</sup> of July bike race on a standard high school track that is one-fourth of a mile around. Limin rides his bike at an average rate of 22 miles per hour. How many trips around the track would Limin make if he rides his bike at this steady rate for one hour?  $22*4 = 88$

5	[\$]75	<p>Grace and her best friend decide to prank their whole class for April Fool's Day. They bought 19 whoopee cushions for \$5 each, 7 books of Mad Libs for \$4 each, and 9 packs of trick rubber pencils for \$3 each. Grace and her friend split the cost evenly between themselves. How much did Grace have to pay for her half of the supplies?</p> $\begin{aligned} &= (5*19+7*4+9*3)/2 \\ &= 150/2 = 75 \end{aligned}$
6	99 [days]	<p>This year, the Mathville Mayor declared that summer begins at 12 AM on Memorial Day (May 31) and ends at 11:59 PM on Labor Day (September 6). How many summer days are there this year in Mathville?</p> <p>1 day in May      30 days in June      31 days in July      31 days in August      6 days in September</p>
7	12 [main dishes]	<p>Brycen's extended family is having a large Thanksgiving feast that consists of 48 dishes, including desserts, appetizers, side dishes, drinks, and main dishes. One-third of the dishes are desserts. There are half as many appetizers as there are desserts. There are 3 times as many main dishes as drinks. There are the same number of side dishes as appetizers. How many main dishes are there at Brycen's Thanksgiving dinner?</p> $\begin{aligned} 48/3 &= 16 \text{ desserts (32 dishes left)} \\ 16/2 &= 8 \text{ appetizers (24 dishes left)} \\ \text{Side dishes} &= 8 \text{ (16 dishes left)} \\ 16 &= 3x + 1x \\ 4 \text{ drinks and } 4*3 &= 12 \text{ main dishes.} \end{aligned}$

**8**

18[dollars]

It's your birthday and your Grandpa sent you the following clues to figure out the number of dollars inside your gift. How many dollars are inside your gift?

$$\begin{array}{c} \text{Party Hat} \\ \times \quad \times \quad = \end{array} 64$$

$$\begin{array}{c} \text{Party Hat} \\ + \quad - \quad = \end{array} 2$$

$$\begin{array}{c} \text{Party Hat} \\ + \quad - \quad - \quad = \end{array} 6$$

$$\begin{array}{c} \text{Party Hat} \\ + \quad + \quad - \quad = \end{array} \text{Gift}$$

$$\text{Party Hat} = 4$$

$$\text{Party Hat} = 6$$

$$\text{Party Hat} = 8$$

$$6+8+8-4 = 18$$

9	108 [pieces of candy]	<p>In Candyville, each house gives 3 pieces of candy to children who are trick or treating (or they don't give out candy at all). Eva can go trick-or-treating in only one neighborhood on Halloween. In West Candyville, she can visit 10 doors every 20 minutes, but 1 out of every 6 doors she visits will not be handing out candy. In East Candyville she can visit 12 doors every 15 minutes, but one out of every 4 doors is not handing out candy. What is the maximum number of pieces of candy Eva can receive after 1 hour of trick-or-treating?</p> <p>West Candyville = <math>10 \times 3 = 30</math> doors visited in an hour - <math>30/6</math> doors that give no candy = 25 candy doors</p> <p>East Candyville = <math>12 \times 4</math> doors in an hour = 48 doors. <math>48/4 = 12</math> doors don't hand out candy      36 candy doors.  <math>36 \times 3 = 108</math></p>
10	3,328 [4-leaf clovers]	<p>Millions of clovers are spread evenly across St. Patrick's Meadow where 1/12 of the clovers have 4 leaves while the rest of the clovers have 3 leaves. Larry the Leprechaun counts a total of 156 clovers inside a 6 inch by 6 inch square of meadow. How many 4-leaf clovers would he expect to find in an 8 foot by 8 foot square of meadow?</p> <p><math>156/12 = 13</math> 4-leaf clover per 6x6 inch square.      There are 4- 6x6in squares inside each square foot.      There are 64 square feet in the new square.  <math>13 \times 4 \times 64 = 3328</math></p>

# “Math is Cool” Championships -- 2020-21

## 4<sup>th</sup> Grade

### Linda Moore Triple Jump Solutions

	<b>Answer</b>	<b>Solution</b>
<b>1</b>	7420	What is 7420.079 rounded to the nearest whole number?
<b>2</b>	200 [participants]	A large Zoom call can accommodate 1000 participants. If a call is 80% full, how many more participants can join the call?  20% can still join 20% of 1000 is 200
<b>3</b>	47 [charms]	Sahana has a package of charms and is putting charms onto 6 bracelets. She puts 7 charms on each bracelet and has 5 left over. How many charms were in the package?  $6 \times 7 + 5 = 47$ charms
<b>4</b>	110	What is the sum of the all of the even integers between 1 and 21?  $(2+20) \times 5$
<b>5</b>	[\$] 1000	Santa's bag is full of gifts, and weighs a total of 14 pounds. The empty bag weighs 4 pounds by itself. Each gift in the bag weighs 1 pound, and is worth \$100. How many total dollars are the gifts in Santa's bag worth?  $14 \text{ lb} - 4 \text{ lb} = 10 \text{ lb of gifts}$ $10 \text{ gifts} \times \$100 = \$1000$

6	764	<p>Use the following clues to find the mystery 3 digit number.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>1</td><td>6</td><td>2</td></tr> <tr> <td>9</td><td>8</td><td>5</td></tr> <tr> <td>2</td><td>3</td><td>4</td></tr> <tr> <td>1</td><td>7</td><td>3</td></tr> <tr> <td>5</td><td>7</td><td>4</td></tr> <tr> <td>?</td><td>?</td><td>?</td></tr> </table> <p>One digit is correct and in the correct position.</p> <p>Nothing is correct.</p> <p>One digit is correct and in the correct position.</p> <p>One digit is correct but not in the correct position.</p> <p>Two digits are correct. One is in the correct position and one is not in the correct position.</p> <p>What is the mystery number?</p> <p>After the 2 row, 5, 8, 9 are eliminated.      After row 3, 2 is eliminated. (1, 4, 6, 7 are left...but only 1 or 6 can be part of it...not both.) Therefore, 4 and 7 are included.      After the 4th row, one is no longer an option because we know 7 if a number and it's the only correct number.      6 was in the correct position in the 1<sup>st</sup> row, so 6 is in the middle.      4 is in the correct place in row 3. Therefore 7 must be the first number.</p>	1	6	2	9	8	5	2	3	4	1	7	3	5	7	4	?	?	?
1	6	2																		
9	8	5																		
2	3	4																		
1	7	3																		
5	7	4																		
?	?	?																		
7	4 [pentagons]	<p>Tehya is drawing squares and pentagons on a piece of paper, so that none of the sides are touching. She has at least one of each shape. There are a total of 32 sides on her paper. How many pentagons has Tehya drawn?</p> <p>There must be an even number of pentagons to have a total number of even sides because square always have even sides.</p> <p>2 pentagons leaves 22 sides      6 pentagons leaves 2 sides.      4 doesn't go into 22 or 2, so the only other option is 5 pentagons leaving 12 sides which will make 3 squares.</p>																		

8	31 [floors]	<p>Maria enters an office building on the ground floor (1<sup>st</sup> floor). She takes the stairs up 3 floors and then takes the elevator up 12 more floors to the middle floor of the building. How many floors in all does the building have?</p> <p>Takes the stairs from the 1<sup>st</sup> floor to the 4<sup>th</sup> floor. Then takes the elevator up to the 16<sup>th</sup> floor. There are 15 floors before the 16<sup>th</sup> floor so, the last floor is 15 floors after the 16<sup>th</sup> floor. There are 31 floors.</p>
9	30 [marbles]	<p>Hank has a bag of 50 marbles. Ninety percent of them are red and the remainder are blue. After some of the red marbles were removed from the bag, 75% of the remaining marbles are red. How many red marbles were removed from the bag?</p> <p>45 marbles are red and 5 marbles are blue.        5 blue marbles are 25% of the new bag, so there must be 20 total marbles  <math>50 - 20 = 30</math> removed marbles</p>
10	[\$] 120	<p>Five crewmates have a total of \$340 between them. Cyan has twice as much as Red. Red has three times as much as Yellow. Yellow has half as much as Green. Purple has \$100. How much money does Cyan have in dollars?</p> <p>Yellow = 1 yellow        Green = 2 Yellow        Red = 3 Yellow        Cyan = 6 yellow        First 4 teammates = 12 yellow        Purple = 100        Total = \$340  <math>12y = 240</math> <math>y = 20</math>  <math>Cyan = 20 * 6 = 120</math></p>

# “Math is Cool” Championships -- 2020-21

## 4<sup>th</sup> Grade

### College Bowl Round #1 Solutions

	<b>Answer</b>	<b>Solution</b>
<b>1</b>	138	What is the sum of 125 and 13?
<b>2</b>	10	What is the average (mean) of the following 5 numbers? 3, 12, 14, 11, 10 $=(3+12+14+11+10)/5 = 50/5 = 10$
<b>3</b>	64	What is 8 squared?
<b>4</b>	5	What is the greatest prime factor of 120? Prime factors are: 2, 3, 5
<b>5</b>	92 [minutes]	The SKELD space station takes 644 minutes to orbit the earth 7 times. How many minutes does it take for the space station to orbit the earth one time? $644/7 = 92 \text{ minutes}$
<b>6</b>	990 [ways]	You and 10 friends are competing in a Minecraft tournament. How many possible ways are there to award 1 <sup>st</sup> , 2 <sup>nd</sup> , and 3 <sup>rd</sup> places? $11*10*9=990$
<b>7</b>	80 [feet]	Biff walked 200 feet. Eho walked 40 yards. How many more feet did Biff walk than Eho? $\text{Eho walked } 40*3 = 120 \text{ feet.}$
<b>8</b>	30 [shoes]	Mustafa has 15 pairs of tennis shoes. How many tennis shoes does he have? $2*15 = 30$
<b>9</b>	20 [quarts]	How many quarts are in 5 gallons? $5*4 = 20$
<b>10</b>	19 [cookies]	Bryson gives Amanda 6 cookies. Now they each have 25 cookies. How many cookies did Amanda have to begin with? $25-6 = 19$

# “Math is Cool” Championships -- 2020-21

## 4<sup>th</sup> grade

### College Bowl Round #2 Solutions

	<b>Answer</b>	<b>Solution</b>
<b>1</b>	10 [%]	Jose has 20 pencils. His teacher gives him 2 more pencils. What is the percent increase in the number of pencils he has? <b>% increase = <math>(22 - 20)/20 * 100 = 10\%</math></b>
<b>2</b>	103 [degrees]	Two angles of a triangle are 45 degrees and 32 degrees. In degrees, what is the measure of the 3 <sup>rd</sup> angle? $45+32 = 77$ $180-77 = 103$
<b>3</b>	5	When you completely reduce the fraction 12/48 you get a fraction in the form of A/B. What is A + B? $12/48 \text{ reduces to } \frac{1}{4}$ $1+4 = 5$
<b>4</b>	80 [weeds]	Dane pulls 19 weeds in 30 minutes and Lizzy pulls 14 weeds in 20 minutes. How many weeds can they pull in an hour? $\text{Dane} = 19*2 = 38 \text{ per hour}$ $\text{Lizzy} = 3*14 = 42 \text{ per hour}$ $42+38 = 80$
<b>5</b>	44	The sum of two numbers is 88. The difference of the numbers is 12. What is the average of the two numbers? $88/2 = 44$
<b>6</b>	11 [sums]	You roll two standard 6-sided dice. How many different sums are possible when you add the two numbers showing on the dice? <b>2-12 are possibilities</b>
<b>7</b>	700	What is the product of 25 and 28? $20*25+8*25 = 500+200 = 700$
<b>8</b>	27 [cm]	What is the perimeter of a regular nonagon with a side length of 3 cm? $9*3 = 27$
<b>9</b>	250 [cm]	How many centimeters are equal to 2.5 meters? $2.5*100 = 2.50$
<b>10</b>	56 [degrees]	If an angle is 34 degrees, how many degrees is its complementary angle? $90-34 = 56$

# “Math is Cool” Championships -- 2020-21

4<sup>th</sup> grade

## College Bowl Round #3 Solutions

	<b>Answer</b>	<b>Solution</b>
<b>1</b>	1	What is the smallest positive factor of 2021?
<b>2</b>	84 [feet]	There are a total of 15 students in Kellen's 4 <sup>th</sup> grade class. When they line up for lunch, they have to stand 6 feet apart. How many feet long will their lunch line be? $14 \times 6 = 84 \text{ feet}$ There are 14 gaps between 15 students
<b>3</b>	9	Medha got scores of 10, 9, 7, 10, 6, 9, and 10 on her last seven math quizzes. What was her median quiz score? In order they are 6, 7, 9, 9, 10, 10, 10
<b>4</b>	25[%]	A checkerboard is 8 squares by 8 squares. Each of 2 players starts with 8 pawns with each pawn on its own square. What percent of the total checkerboard squares start with a pawn on it? $16/64 = \frac{1}{4} = 25\%$
<b>5</b>	7	Andy's lucky number is a factor of 28 and a multiple of 7. What is the smallest number that Andy's lucky number can be? The smallest multiple of 7 is 7 and 7 is a factor of 28.
<b>6</b>	90 [degrees]	How many degrees will the minute hand of an analog clock move between 3:40 PM and 3:55 PM on the same day? A whole clock is 360 degrees. 15 minutes is $\frac{1}{4}$ hour, so it moves $360/4 = 90$
<b>7</b>	12 [girls]	If the ratio of girls to boys in a class of 28 students is 3:4, how many girls are there in the class? Ratio gives 7 parts...each part is 3 girls. Girls = $3 \times 4 = 12$
<b>8</b>	6	What is the quotient of 30 and 5? $30/5 = 6$
<b>9</b>	12 [days]	After having a fever, Alex has to quarantine for 288 hours. How many days does he have to quarantine? $288/24$
<b>10</b>	64	What is one-fourth of 256? $256/4$