“Math is Cool” Championships -- 2020-21

5th Grade

Mental Math Solutions

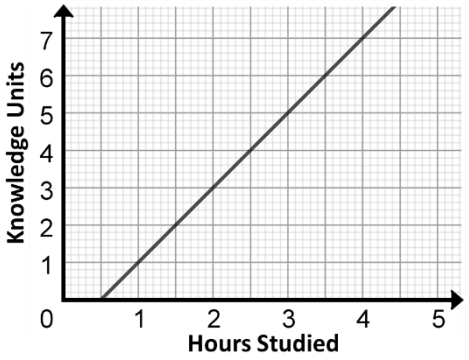
	Answer	Solution
1	[$] 18	I evenly distribute half of my money among three of my friends. If each friend now has three dollars, how many dollars did I have to start with? 3 × 3 × 2 = 18
2	5 [feet]	How many feet are in 60 inches? 60 in.×(1 ft / 12 in.)
3	195 [sq. feet]	What is the area of the floor of a rectangular room with length 13 feet and width 15 feet? 13 × 15 = 150 + 45 = 195
4	12	What is fifteen (one five) percent of eighty (eight zero)? 8+4 =12
5	12	What is the median of the following set of numbers: 13, 3, 11, and 100? 11 + 13) / 2 = 12
6	3	The probability of drawing a red King, red Queen, or red Jack from a standard deck of 52 cards can be expressed as a reduced fraction equal to X over 26. What is X? 6/52 = 3/26 ➞ 3
7	12	What is the perimeter of the polygon created by connecting the points (one comma two), (four comma two), (one comma five), and (four comma five) ? 2*3 + 2*3
8	91	What is the largest two-digit, composite integer that is not a multiple of two, three, or five? ~~99~~, ~~98~~, 97, ~~96~~, ~~95~~, ~~94~~, ~~93~~, ~~92~~, 91 97 is prime, 91 is 70 + 21 = 13*7

"Math is Cool" Championships -- 2020-21

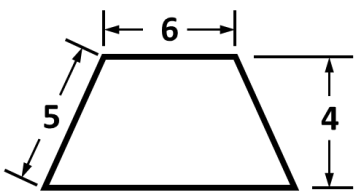
5th Grade

Individual Test Solutions

	Answer	Solution
1	108	Evaluate: 9×12 9*10+9*2 = 90+18=108
2	8	What must be added to 16 to get 24? 24 – 16 = 8
3	12 [fence posts]	If Brendan can paint 2 fence posts in 10 minutes, how many fence posts can he paint in one hour? 60/10 = 6 6*2 = 12
4	5000	What is ten times ten times ten times five? 10*10*10*5 = 5000
5	91 [items]	Amber wants to make some chicken-mushroom skewers to eat. If each skewer needs 2 cubes of chicken and 5 mushrooms, then what is the combined number of chicken cubes and mushrooms she will need to make 13 skewers? (5+7)*13 = 91
6	5 [students]	At a math conference, 35 students break into 7 groups. How many students are in each group? 35/7 = 5

7	7 [knowledge units]	Henry studies a lot, and the more he studies, the more he learns. The graph shows how much Henry learns in relation to how long he has studied. How much will Henry have learned, in "knowledge units," if he studies for 4 hours? For x = 4, y = 7 
8	113 [cans]	Your classroom is participating in a food drive to help your community. Your teacher wants you to collect 200 cans of food. You bring in 3 boxes that have 8 cans in each box. Your friend brings in 9 boxes with 7 cans in each box. How many cans of food does your class still need to collect? 200 – 3*8 – 9*7 = 200 – 24 – 63 = 200 – 87 = 113
9	9	What number is equivalent to $\frac{3^4}{3^2}$? Use exponent rules or 81 / 9 = 9
10	41	The decimal number 0.64 can be written as a reduced common fraction with the form A/B. What is A + B? 16/25
11	23	Multiply 2/3 times 4/5 and reduce the fraction to simplest terms in the form of A/B. What is A + B? 8/15 → 8 + 15 = 23
12	65 [degrees]	If two angles of a triangle measure 36 and 79 degrees, what is the value of the third angle? Sum of angles in triangle is 180
13	10920 [seconds]	How many seconds are in 3 hours and 2 minutes? 3*60+2 = 182 min 182*60 = 1820*6 = 3640*3 = 9000+1800+120 = 10920

14	360 [people]	Ninety percent of the people in downtown Coolsville wear sunglasses. If there are currently 3,600 people in downtown Coolsville, how many of them are not wearing sunglasses? 3600*0.10 = 360
15	363 [minutes]	How many minutes is 1:03 PM after 7:00 AM on the same day? 6 h 3 min = 6*60+3 = 363
16	28	What is the sum of the first 5 prime numbers? 2+3+5+7+11 = 28
17	42	What is the least common multiple of 6 and 14? 2*3*7 =42
18	10 [%]	I have 200 songs on my Spotify playlist. Twenty of them are in French. If I pick a song at random, what is the probability, as a percentage, that it will be in French? 20/200 = 10/100 = 10%
19	180 [outfits]	Jonas has 5 shirts, 6 pants, 3 pairs of socks, and 2 pairs of shoes in his wardrobe. If an outfit consists of one of each of these articles of clothing, how many outfits can Jonas make? 5*6*3*2 = 30*6 = 180
20	96	If Robert got a score of 80 out of 100 on his first geometry test, what is the highest possible mean (average) score he could have after taking four more tests that are worth 100-points each? Assume 100 on other 4 tests (100*4+80)/5 = 480/5 = 96
21	130 [units]	A certain rectangle has width of X and a height of 4 times X. If X squared is equal to 169, what is the perimeter of the rectangle? x = sqrt(169) = 13 A = 13*2 + (13*4)*2 = 26 + 104 = 130

22	7 [days]	Andrea's plant grows at a rate of 0.2 inches per day and it is already 2.4 inches tall. Emily has a plant that is 1.1 inches tall and grows at a rate of 0.4 inches per day. How many full days will it take for Emily's plant to be taller than Andrea's plant? $2.4 + 0.2*x < 1.1 + 0.4*x$ $1.3 < 0.2*x$ $6.5 < x \rightarrow x = 7$
23	6	Number the days of the week from 1 to 7 starting with Monday = 1, Tuesday = 2, and so on, to Sunday = 7. If today is Monday then what is the number for the day of the week that it will be in 824 days? $824 \equiv 5 \pmod 7$ Monday (1) + 5 = 6 (Saturday)
24	8 [%]	Arun's standard 52-card deck is missing two aces. What is the probability of drawing a king from Arun's deck of cards? Answer as a percentage. 4/50 = 8/100 = 8 %
25	[$] 10	Two items were bought for a total of 16 dollars. One item cost 4 dollars less than the other. How many dollars did the more expensive item cost? $x + (x - 4) = 16$ $2x = 20$ $x = 10$
26	32	What is the positive difference between 50 and the sum of its four smallest factors? 50 – (1+2+5+10) = 32
27	11	Which number is missing in this sequence: 2, 4, 7, _ , 16 ? pattern: +2, +3, +4, +5
28	36 [sq. units]	An isosceles trapezoid has the dimensions shown in the figure. What is the area of this trapezoid in square units?  Sides are 3-4-5 triangles $4*(6 + [6+3+3]) / 2 =$ $4*18/2 = 2*18 = 36$

29	20,000 [m^2]	Stephanie ran 10 times around the entire perimeter of a rectangular field at a rate of 12 kilometers per hour. If the field has a length that is twice its width, and it took Stephanie 30 minutes to complete all 10 laps, what is the area of the field in square meters? 12000/2 = 6000 m 6000 / 10 = 600 = P P = (x + 2x)*2 = 6x x = 600/6 = 100 100* 200 = 20000
30	-6	By definition, (x $ y) = $\frac{x}{y}$ – xy. What is (x $ y), if y = 2 and x = 4? 4/2 – 4*2 = 2 – 8 = -6
31	3	What is the remainder when 452598 is divided by 13? 452598 → 598-452 =146 146/13 = 11R3
32	12 [primes]	How many prime numbers are there between 25 and 75? Count them
33	[$] 59	Doug has 23 dollars in his bank account at the beginning of the year. Every other week, he buys 10 candy bars at 80 cents each and Doug earns 25 dollars a month. How much, in dollars, would Doug have in his bank account at the end of April, assuming there are exactly 4 weeks in every month? Find profit per month (spending-income), multiply by 4 months, add 23
34	25	Two sides of triangle ABC are 25 and 13. What is the average of all possible whole number lengths for the third side. The possible values of the third side range from 25+13 to 25-13, exclusive, so the average of these values is 25.
35	600	Consider the first 20 odd counting numbers greater than 10. What is the sum of these 20 numbers? sum of the first x odd numbers is x^2 $25^2 - 5^2$ = 25(25 – 1) = 600

36	480 [ways]	How many ways are there to arrange the letters in the word NUMBER, spelled N-U-M-B-E-R, where the U and the E are not next to each other? Assume UE (or EU) are a block, then subtract those permutations from 6! 6! – 5!*2 = 720 – 120*2 = 720 – 240 = 480
37	186	Three special fair 5-sided dice have 4 blue sides and 1 magical gold side. If you roll a gold side, you will win 5 dollars. If Polly rolls all three dice, determine the probability that she will win at least 5 dollars as a reduced common fraction A/B. What is A + B? The only way Polly can NOT win at least 5 dollars is if all 3 dice do not roll a gold side. The probability of this happening is (⅘)^3=64/125. Subtract this from 1 to get 1 - 64/125 = 61/125. 61+125 =186
38	25	Deborah can paint a wall in 3 hours. Joe can paint the same wall in 4 hours and David can paint the same wall in 2 hours. Working together, it takes a number of hours equal to A/B, as a reduced common fraction, to paint the wall. What is A+B? $\frac{1}{3}+\frac{1}{4}+\frac{1}{2}=\frac{13}{12}$ of a room in one hour. Thus, together, it will take 12/13 of an hour to finish the wall working together. 12+13 = 25
39	90 [students]	At Yorknew Elementary School, all of the students participate in extracurricular activities. There are 60 students on the robotics team, 40 students on the math team, and 20 students participate in drama. Of these students, 20 participate in both robotics and math, 10 students participate in robotics and drama, 10 students participate in math and drama, and 10 participate in all three activities. How many students attend this school? Draw a Venn diagram and count how many students are in each section without double counting. 10+(20-10)+(60-10-10)+(40-10-10)+(20-10) = 90

40	20 [%]	Let points A, B, C, and D be equally spaced, in that order, along a straight line of total length 1.1 inch from endpoints A to D. Suppose we randomly choose a line segment of length 0.1 from anywhere along AD. What is the probability, as a percentage, that the random segment touches or contains either point B or point C? Think of this more as the point fitting on the 0.1-inch line segment. The starting point of the line segment can be from 11/3 – 0.1 to 11/3 for B to fall on the line segment, or 22/3 – 0.1 to 22/3 for C to fall on the line segment. The range of the starting endpoint of the 0.1-inch line segment can go from 0 to 1. Thus, the total "successful" segment has a length of 0.2. 0.2/1 = 20%

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5th Grade

Multiple Choice Solutions

	Answer	Solution
USE THE FOLLOWING INFORMATION TO SOLVE PROBLEMS #1 THROUGH #3. Biff is crocheting a blanket that is made out of many equal-sized squares. The blanket is going to be 10 ft by 15 ft. Each square which makes up the blanket is 6 inches by 6 inches.		
1	B	How many squares will Biff need to crochet to have enough to complete his blanket? A) 150 B) 600 C) 300 D) 100 E) Answer not given. **1 square foot = 4 squares, 6" x 6"** **Total blanket = 10x15 = 150 ft^2** **150*4 = 600 squares**
2	A	If it takes Biff 30 minutes to crochet each square, how many hours will it take Biff to crochet enough squares to make the blanket? A) 300 B) 1200 C) 75 D) 200 E) Answer not given. **1 hour = 2 squares** **600 squares * 1 hour/2 squares = 300 hours**
3	E	If Eho crochets the same size squares at half the speed of Biff, how many hours would it take Eho to crochet a 10 ft by 10 ft blanket? A) 1200 B) 150 C) 300 D) 600 E) Answer not given. **½ the speed of Biff = 1 hour per square** **10x10 = 100 ft^2 * 4 squares/ft^2 = 400 squares** **Therefore, it will take him 400 hours.**

USE THE FOLLOWING INFORMATION FOR QUESTIONS 4 THROUGH 7.

A small store is selling toilet paper, hand sanitizer, and disinfecting wipes. One day, there is a mob of shoppers who buy everything in the store. The store owner sold 56 packages of toilet paper, 94 bottles of hand sanitizer, and 36 packages of disinfecting wipes. Each shopper was only allowed to purchase one of any given item.

Item	Total Quantity	Unit Price ($)
Toilet paper	56	4.00
Hand sanitizer	94	3.50
Disinfecting wipes	36	?

4	B	The first two customers each bought a package of toilet paper and a package of disinfecting wipes. The combined amount that the two customers paid was $18.00. How much does one package of disinfecting wipes cost? A) $10 B) $5 C) $4 D) $2 E) Answer not given. **2($4) + 2(disinfecting wipes) = $18** **disinfecting wipes = $5**
5	B	The third customer purchased one of each item. What percent of the customer's total amount did the hand sanitizer account for? A) 32 B) 28 C) 40 D) 44 E) Answer not given. **4 + 3.50 + 5.00 = 12.50** **3.50 is what percent of 12.50?** **3.5 / 12.5 = 0.28 ➔ 28%**

6	C	The fourth customer also purchased one of each item, and paid for the total with a twenty-dollar bill. The cashier has one-dollar bills and quarters available to make change. How many different ways can the cashier make change for the customer, assuming that they have an unlimited number of one-dollar bills and quarters? A) 6 B) 7 C) 8 D) 9 E) Answer not given. Total change = \$20 - \$12.50 = \$7.50 **Ways to make \$7.50 in change with dollar bills and quarters:** **7\$ + 2q** **6\$ + 6q** **…** **0\$ + 30q** **Total of 8 ways.**
7	D	What was the total amount of money (in dollars) taken in by the store owner for all of the items that were sold? A) 756 B) 650 C) 722 D) 733 E) Answer not given. **56(\$4) + 94(\$3.5) + 36(\$5) = \$733**
USE THE FOLLOWING INFORMATION FOR QUESTIONS 8 THROUGH 10. Kai was given special eggs that have a 25% chance of hatching a lork, which has one leg, a 25% chance of hatching a zork, which has two legs, and a 50% chance of hatching a mork, which has three legs.		
8	C	What is the average number of legs that a creature hatched from a special egg will have? A) 1 B) 1.5 C) 2.25 D) 2.75 E) Answer not given. **(0.25)(1) + (0.25)(2) + (0.50)(3) = 2.25**

9	**D**	Kai hatches an unknown number of eggs, and counts 100 legs. If there are thirteen morks, how many different combinations of lorks and zorks could there be? A) 58 B) 59 C) 30 D) 31 E) Answer not given. **13 morks = 13*3 = 39 legs** **Therefore, there are 61 more legs to account for.** **There must be at least one lork, since the number of legs is odd. And therefore, there must be an ODD number of Lorks. If you make a table to count them up:** **Number of Lorks (1 leg) — Number of Zorks (2 legs)** **1 — 30** **3 — 29** **… — …** **61 — 0** **The number of Zorks possible ranges from 0 to 30, therefore there are 31 ways to get this combination of legs.**
10	*A*	If two eggs hatch, what is the probability that there will be a total of six legs? A) 1/4 B) 1/2 C) 3/4 D) 1/9 E) Answer not given. **The only way to get six legs is if both eggs hatch into Morks (3 legs each).** **P(Mork & Mork) = (0.50)(0.50) = 0.25 = ¼**

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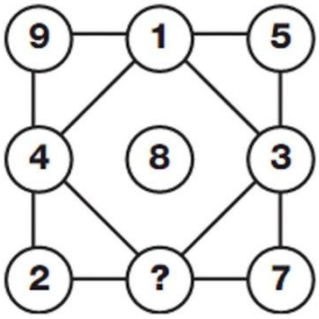
5th Grade

Team Test Solutions

	Answer	Solution
1	8 [piles]	You have a total of 56 pencils and you decided to separate them into piles. If each pile has 7 pencils, how many piles do you make? 56/7 = 8
2	240	What is the sum of the first 15 even counting numbers? 15*15+15 = 240
3	14 [marbles]	Isaac has a box that contains 84 marbles. Half of them are red, one-third are white and the rest are green. How many of his marbles are green? 84 - 84/2 + 84/3 = 14
4	5 [socks]	Kyle has a total of 12 black socks, 6 blue socks, 8 red socks, and 10 yellow socks. Without looking, Kyle begins to pull out random socks. How many socks does he have to pull out to ensure that he has a pair of the same color? Worst case scenario is that Kyle pulls one of each color, which is 4 socks. On the fifth pull, Kyle will be guaranteed to draw one matching sock.
5	6	Replace the question mark with the appropriate number.  All the numbers in every row add up to 15 (6 is also the only number not shown out of numbers 1-9)
6	-3	If the mean (arithmetic average) of the following set is 5, what is the value of x? {4, x, 10, 10, 6, 7, 9, x} (4+10+10+6+7+9+2x= 5*8 2x=40-46 x= -3

7	6996	I am thinking of a four-digit number. If the sum of the digits in my number is 30 and my number is a palindrome (reading the same forwards as backwards), what is the least possible value of my number? 30/4 = 7.5, so we get that 8+8+7+7 = 30 But 9+9+6+6 = 30 Least possible value is 6996
8	40 [cm]	Find the number of digits in 9^5 and call that quantity X. What is the perimeter of a regular octagon that has a side length equal to X cm? $9^5 = 59049 \rightarrow$ 5 digits 8*5 = 40
9	1440 [arrangements]	In the faraway land of Vereeklose, there are 8 people seated in a circle. In how many possible distinct arrangements could these 8 people be seated if Lefty and Wright must be seated next to each other? Treat Lefty and Wright as a block. There are now 7 "people" to arrange without restrictions and this would be 6!, or 720 (because they are in a circle). However, Lefty and Wright could switch seats so we multiply this number by 2 to get 1440.
10	59 [points]	In a game of Nogamé, players can score 6 or 13 points. What is the largest score that cannot be attained? The maximum integer that cannot be written in the form am + bn for nonnegative a and b and with m and n being coprime is: mn - m - n. So, … 6 * 13 - 6 - 13 = 59

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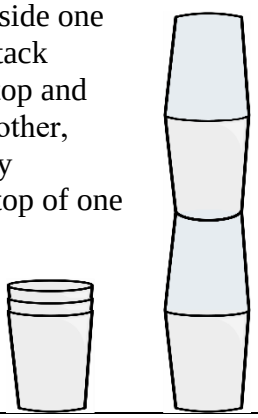
5th Grade

Linda Moore Triple Jump Solutions

	Answer	Solution
1	144	Calculate: 345 ÷ 15 × 7 – 17 Do the math in the right order
2	18	What is 24% of 75? 10% = 7.5, 1% = 0.75 → 2*7.5 + 4*0.75 = 15 + 3 = 18
3	9 [dinosaurs]	Emily is on a farm with chickens and dinosaurs. Assuming that each chicken has one head and two feet and that each dinosaur has one head and four feet, how many dinosaurs are on the farm, if Emily sees 14 heads and 46 feet? **Assume you start with 14 chickens (to account for the 14 heads). But that is only 28 feet. You have to add 18 more feet, or 2 more feet to each of 9 heads. That means there are 9 four-footed animals, or 9 dinosaurs.**
4	12 [points]	Malika scored 12, 8, 20, 4, and 16 points in five consecutive basketball games. What is the mean (average) number of points that she scored per game? (12+8+20+4+16) / 5 = 60/5 = 12
5	34 [cm]	When plastic cups for drinking water are stacked inside one another, each cup added to the stack increases the stack height by 2 cm. When the cups are stacked top on top and bottom on bottom so that they don't fit inside each other, each cup adds 11 cm to the stack height. How many centimeters taller is a column of 7 cups stacked on top of one another versus 17 cups stacked inside one another? **Stacked = 7 * 11 = 77** **Inside = 11 + 16 * 2 = 11 + 32 = 43** **77 - 43 = 34 cm** 
6	540 [degrees]	In degrees, what is the sum of the interior angles of a regular pentagon? Sum of interior angles = (n-2)*180

7	136 [gestures]	The 17 members of the Physically Distanced Math Aficionados club meet for a distanced gathering. Each member greets every other member with the "esteemed X" gesture (crossing arms in the shape of an X). How many "esteemed X" gestures take place? $16 + 15 + \ldots + 1 = 17*16/2 = 66$
8	0	If $x^2 - 1 = 0$, what is the sum of the solutions for x? The roots would be -1, 1. Their sum is 0.
9	48 [mph]	In a COVID-free time, Mary drove from her house to Grandma's at a leisurely rate of 40 miles per hour (mph). She had to hurry home along the same route to feed her pony, driving at 60 mph. What was her average speed in mph over the entire trip? $2*(40+60) / (40*60) = 48$ mph
10	-6	A sequence starts 2, 6, 4, -2, …, where every term after the first two is the difference of the prior term minus the term before the prior term. For example, the third term is 6 – 2 = 4. What is the 2021st term of this sequence? This sequence repeats every 6 terms (2, 6, 4, -2, -6, -4, 2…), so... $2021 \bmod 6 \equiv 5$ The 5th term is -6.

"Math is Cool" Championships -- 2020-21

5th Grade

College Bowl Round #1 Solutions

	Answer	Solution
1	18	What is the positive difference between thirty-three and fifteen? 33 – 15 = 18
2	64 [dollars]	Last Monday, Ethan baked 7 dozen large cookies and sold them all at a price of one dollar each. If the ingredients for his cookies cost $20, what was Ethan's net profit on Monday? 7 dozen = 7*12 = 84 cookies $84 - $20 = $64
3	-315	Find the product of negative 7, negative 9 and negative 5. (-7)(-9)(-5) = -315
4	13 [sides]	How many sides does a tridecagon have? Just have to know that it has 13 sides.
5	14 [lawns]	Jeff is saving up to buy a pet turtle. He earns $15 for each whole lawn he mows. If he needs $14 for food, $73 for a tank, $13 for a warming lamp, and $110 for the turtle, how many whole lawns does he need to mow to have enough money to buy the turtle and all of the gear? (14+73+13+110) / 15 = 210/15 = 42/3 = 14
6	40 [minutes]	Timothy leaves home at 11:45 AM and drives to Burger King for lunch. He spends 20 minutes at Burger King, then drives home and arrives there at 1:25 PM. How many minutes did it take Timothy to drive to Burger King? Assume it took him the same amount of time to drive home as it took to drive there. 1 h + 15 min + 25 min = 100 min (100 – 20) / 2 = 40
7	10 [minutes]	If a snail travels 12 feet per hour, how long does it take, in minutes, for the snail to travel 24 inches? 24 in. / (12*12 in./60 min.) = 2*60/12 = 2*5 = 10
8	52 [cups]	How many cups are in three gallons plus one quart of milk? 1 quart = 2*2 = 4 cups 1 gal. = 4 quarts 3*4*4+4 = 48+4 = 52

9	19 [seats]	Ruby sits in seat 49 of row 17 of her High School's auditorium. If Paul sits in seat 69 of the same row, how many seats are between them? 69 – 49 – 1 = 19
10	5	What is the median of the following set of numbers: 2, 9, 5, 7, 2. Median = middle number of a sorted list

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5th grade

College Bowl Round #2 Solutions

	Answer	Solution
1	36 [cm]	What is the perimeter of an equilateral triangle with a side of 12 cm? **12*3 = 36**
2	38 [times]	In every 9th game of "Among Us", Zhang Wei is an Imposter. If he plays 342 games, how many times was he an Imposter? 342 / 9 = 38
3	31	A and B are both positive integers. If A * B = 30, what is the maximum possible value of A + B? A and B equal to 1 and 30 will give the maximum sum.
4	460	What is the sum of the first 10 numbers in the following arithmetic sequence? 1, 11, 21, 31… 10th number is 91 (91+1)*10/2 = 920/2 = 460
5	25	A bag of marbles contains 4 red marbles, 3 white marbles, 5 blue marbles, and 2 yellow marbles. A single marble will be selected at random. The probability of NOT getting a white marble can be written as the reduced common fraction A/B. What is A + B? (4+5+2) / (4+3+5+2) = 11/14 11+14=25
6	19 [students]	A school took a survey of 100 students about whether they like cats or dogs. Seventy-one students said they like dogs, 44 said they liked both, and 10 said they liked neither. How many students said they liked only cats? Venn diagram…. 100-10 =90 71-44 = 27 dogs only 90 - 27 – 44 = 19
7	3 [miles per hour]	A runner runs 1 mile in 10 minutes and then runs another mile in 30 minutes. What is the average speed of the runner, in miles per hour? (2 miles) / (2/3 hour) = 3 mi/hr
8	160 [energy units]	In a particular game, completing a quest will give you a 60% energy unit bonus. If Raveena has 100 energy units at the end of her quest, how many total energy units will she have after the bonus? 1.6*100 = 160
9	2 [prime numbers]	How many prime numbers are between 20 and 30? **23 and 29**

10	250 [dimes]	How many dimes are in 25 dollars? **25*10**

"Math is Cool" Championships -- 2020-21

5th grade

College Bowl Round #3 Solutions

	Answer	Solution
1	90 [degrees]	A triangle has two angles that measure forty-five degrees each. What is the measure of the third angle? Sum of angles is 180
2	6 [coins]	Bobby has 33 cents. What is the least number of coins he could have, if none if his coins are nickels? 3 dimes + 3 pennies
3	120 [ways]	How many ways can you arrange the letters in the word COINS? 5!
4	7	The quotient of one-fourth divided by three-halves can be written as the reduced common fraction A/B. What is A + B? 1/6
5	60 [degrees]	The complement of an angle is twenty-five percent of its supplement. What is the measure of the angle in degrees? (180 - A)/4 = 90 – A 360 – 180 = 3A → A = 60
6	100100	What is the decimal number (base-10) 36 written in binary (base-2)? Do not include the base-2 notation in your answer. 36 = 32 + 4, so we have place value marks at the 3rd and 6th places (from right)
7	648 [numbers]	How many three-digit numbers have three distinct digits? 9 * 9 * 8 = 648
8	600	I am thinking of a number. If you square the smallest two-digit prime number and multiply the result by 5, you will get a number which is 5 more than my number. What is my number? 11*11*5 -5 = (121-1)*5 = 600
9	800 [dollars]	Hua spent ¾ of the money in her savings account on furniture and the rest on a TV. If the TV cost $200, how much money was originally in her savings account? x/4 = 200 x = 800

10	17 [years old]	John has a little sister named Taylor. If John is 10 years old and Taylor is half his age, then how old will Taylor be when John is 22? 10-5 = 5 22 – 5 = 17