

"Math is Cool" Championships - 2018-2019

#sponsor

#date

4th Grade Mental Math Contest

Follow along as your proctor reads these instructions to you. Your Mental Math score sheet is on the back.

GENERAL INSTRUCTIONS applying to all tests:

- *Good sportsmanship is expected throughout the competition by all involved (competitors and observers). Display of poor sportsmanship may result in disqualification.*
- *Calculators or any other aids may not be used on any portion of this contest.*
- *Unless stated otherwise:*
 - *Express all rational, non-integer answers as common fractions, except in problems dealing with money.*
 - *For problems dealing with money, give the answer as a decimal rounded to the nearest cent.*
 - *For fifth and sixth grade, all fractions and ratios must be reduced to simplest form.*
 - *Do not round or approximate answers.*
 - *Leave answers in terms of π or other irrational quantities (e.g., $\sqrt{2}$), where applicable.*
- *Units are not necessary as part of your answer unless it is a problem that deals with time, in which case, a.m. or p.m. is required. However, if you choose to use units, they must be correct.*
- *Record all answers on the colored cover sheets in the answer column only.*
- ***Be sure that the name, team number, etc. at the top of every answer sheet has been filled out.***
- *Tests will be scored as a 0 if answers are not recorded correctly on the answer sheets.*
- *Blank answer sheets and answer sheets with no name will be scored as a 0.*

Mental Math - 30 sec per question

8 problems read orally to everyone - Approximately 8% of Individual Score - 25% of team score

*When it is time to begin, the proctor will read the first question twice. You may not do any writing or talking while arriving at a solution. Once you have a solution, record it on the sheet in front of you. **You may not change or cross out answers once you have written an answer down. If there are eraser marks, write-overs, or crossed-out answers, they will be marked wrong.** Once all students have laid their pencils on the desk, another question will be asked. If a student doesn't lay his/her pencil down, the maximum wait time is 30 seconds after completion of the second reading of the question before another question is asked. You may continue to work on a problem while the next question is being read. The value of each question is a one or zero. Each student will be asked the same eight questions. Individual scores used to determine individual placing will be determined by the sum of the Mental Math score and the Individual Test score for each individual. In addition, the top three Mental Math scores from one team will be totaled and doubled and will contribute to 25% of the team score.*

Final Score:

(Out of 8)

First Score:

(Out of 8)

"Math is Cool" Championships -- 2018-2019

School: _____ Room # _____ Team # _____

Name: _____ Proctor: _____

4th Grade Mental Math - 30 sec per question

8 problems read orally to everyone - Approximately 8% of Individual Score - 25% of team score
When it is time to begin, the proctor will read the first question twice. You may not do any writing or talking while arriving at a solution. Once you have a solution, record it on the sheet in front of you. You may not change or cross out answers once you have written an answer down. If there are eraser marks, write-overs, or crossed-out answers, they will be marked wrong. Once all students have laid their pencils on the desk, another question will be asked. If a student doesn't lay his/her pencil down, the maximum wait time is 30 seconds after completion of the second reading of the question before another question is asked. You may continue to work on a problem while the next question is being read. The value of each question is a one or zero. Each student will be asked the same eight questions. Individual scores used to determine individual placing will be determined by the sum of the Mental Math score and the Individual Test score for each individual. In addition, the top three Mental Math scores from one team will be totaled and doubled and will contribute to 25% of the team score.

Scorer 2

Scorer 1

	Answer	1 or 0	1 or 0
1			
2			
3			
4			
5			
6			
7			
8			

"Math is Cool" Championships - 2018-2019

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4th Grade - #date

Mental Math Contest

Mental Math - 30 sec per question

8 problems read orally to everyone - Approximately 8% of Individual Score - 25% of team score

When it is time to begin, the proctor will read the first question twice. You may not do any writing or talking while arriving at a solution. Once you have a solution, record it on the sheet in front of you. You may not change or cross out answers once you have written an answer down. If there are eraser marks, write-overs, or crossed-out answers, they will be marked wrong. Once all students have laid their pencils on the desk, another question will be asked. If a student doesn't lay his/her pencil down, the maximum wait time is 30 seconds after completion of the second reading of the question before another question is asked. You may continue to work on a problem while the next question is being read. The value of each question is a one or zero. Each student will be asked the same eight questions. Individual scores used to determine individual placing will be determined by the sum of the Mental Math score and the Individual Test score for each individual. In addition, the top three Mental Math scores from one team will be totaled and doubled and will contribute to 25% of the team score.

#	Problem
1	Find the sum of 14 and 12.
2	How many minutes are there in three hours?
3	A basketball hoop is 3 meters plus 5 centimeters tall. How many centimeters tall is the basketball hoop?
4	What is the perimeter of a regular pentagon if each side is 7 inches?
5	Find the product of 5 times 4 times 3 divided by 6.
6	How many quarters are equal to 60 dimes?
7	What is the sum of the number of sides and the number of vertices in a decagon?
8	What is one-half of one third of six-sevenths?

"Math is Cool" Championships -- 2018-2019

School: _____ Room # _____ Team # _____

Name: _____ Proctor: _____

Final Score:

KEY

(Out of 8)

4th Grade Mental Math - 30 sec per question

8 problems read orally to everyone - Approximately 8% of Individual Score - 25% of team score
When it is time to begin, the proctor will read the first question twice. You may not do any writing or talking while arriving at a solution. Once you have a solution, record it on the sheet in front of you. You may not change or cross out answers once you have written an answer down. If there are eraser marks, write-overs, or crossed-out answers, they will be marked wrong. Once all students have laid their pencils on the desk, another question will be asked. If a student doesn't lay his/her pencil down, the maximum wait time is 30 seconds after completion of the second reading of the question before another question is asked. You may continue to work on a problem while the next question is being read. The value of each question is a one or zero. Each student will be asked the same eight questions. Individual scores used to determine individual placing will be determined by the sum of the Mental Math score and the Individual Test score for each individual. In addition, the top three Mental Math scores from one team will be totaled and doubled and will contribute to 25% of the team score.

	Answer
1	26
2	180 [minutes]
3	305 [cm]
4	35 [in]
5	10
6	24 [quarters]
7	20 [vertices and sides]
8	1/7

"Math is Cool" Championships - 2018-2019

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Total # Correct (Final):

Total # Correct (First):

STUDENT NAME: _____ School Name: _____

Proctor Name: _____ Team #: _____ Room #: _____

4th Grade Individual Contest - Score Sheet

DO NOT WRITE IN SHADED REGIONS

	Answer	Scorer 2 1 or 0	Scorer 1 1 or 0
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
1 - 15 Total			

	Answer	Scorer 2 1 or 0	Scorer 1 1 or 0
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
16 - 30 Total			

	Answer	Scorer 2 1 or 0	Scorer 1 1 or 0
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			
31 - 40 Total:			

4th Grade

#date

Scorers: Just score as 0 or 1 and add up those values. (i.e. just work with number correct).

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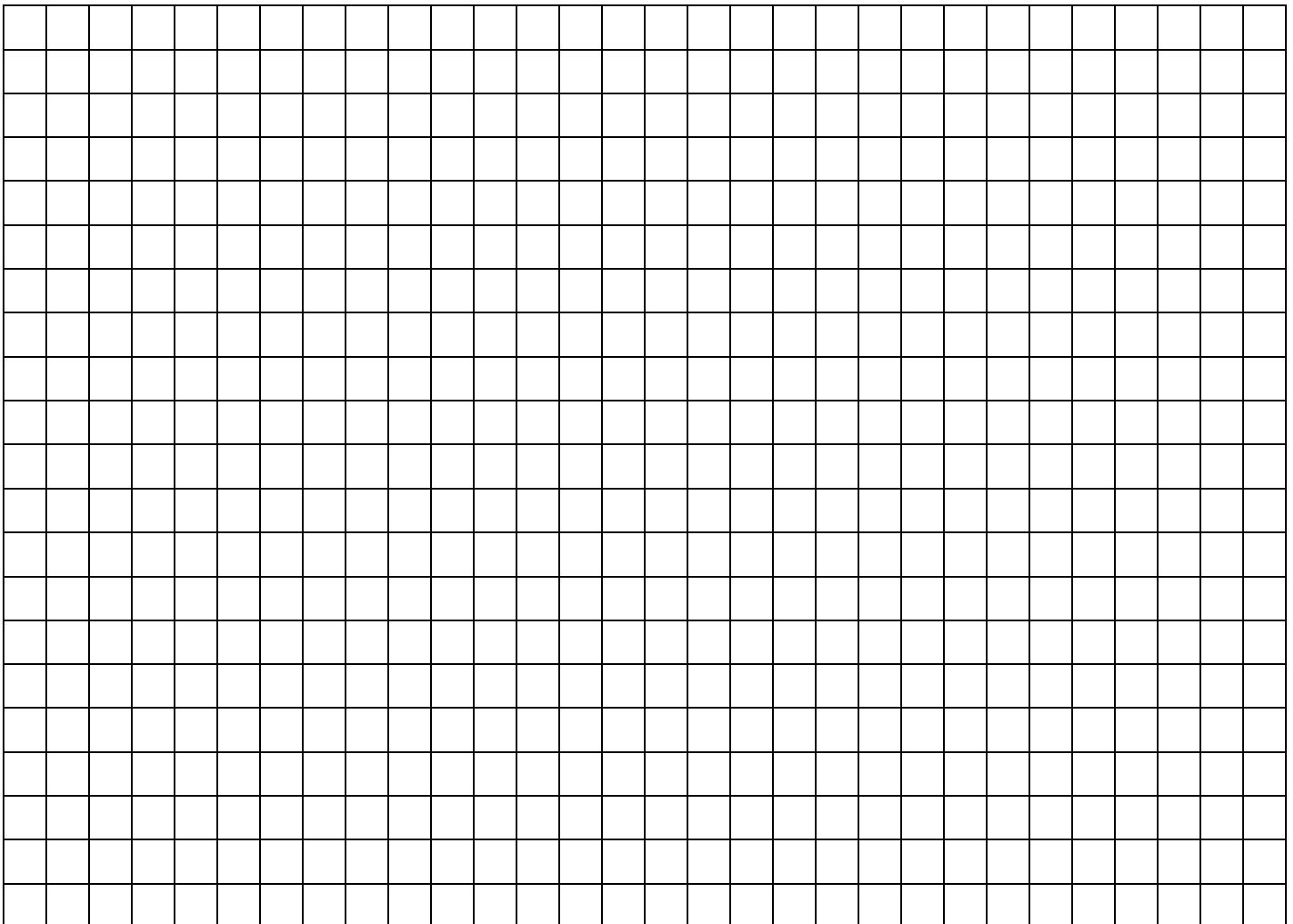
#date

4th Grade Individual Contest

Tear this cover sheet and scratch paper off and fill out the top of the colored answer sheet prior to the start of the test. The graph below is for your use, if needed.

INDIVIDUAL TEST - 35 minutes

You may NOT be seated next to anyone from your school. If you are MOVE NOW to avoid being disqualified! When you are prompted to begin, tear off the colored sheet and begin testing. Make sure your name and school are recorded on the answer sheet. The raw score will be 2 points for correct answers to problems 1-30 and 3 points for 31-40. Record your answers on the score sheet. No talking during the test. You will be given a 5 minute time warning.



"Math is Cool" Championships - 2018-2019

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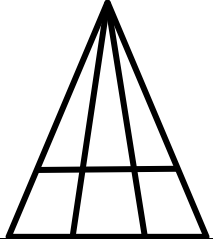
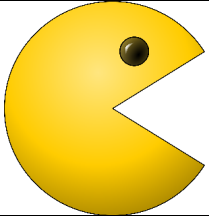
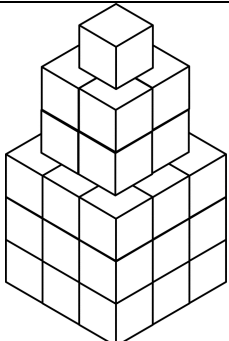
#date

4th Grade Individual Contest

Questions 1-30: 2 points each	
1	What is the sum of 253 and 68?
2	What is the perimeter of a rectangle with side lengths of 10 cm and 12 cm?
3	What is the average of 4, 6, 11, 11?
4	How many sides does a hexagon have?
5	How many centimeters are in two meters?
6	Find the positive difference of 42 and 13.
7	How many factors does 12 have?
8	Easton was getting ready for the Math Is Cool Competition. He bought 5 pencils for 25 cents each, and he paid with a \$5 bill. In dollars, how much change did Easton get back?
9	Round the following number to the thousands place: 52087.00892
10	What number comes next in the following arithmetic sequence? 3, 9, 15, 21, ___
11	It takes Hermione 5 minutes to learn 2 new spells. How long will it take her to learn 8 new spells?
12	Neville's Herbology class starts at 10:25 AM. The class lasts 43 minutes. At what time will his class be over?
13	What is 15% of 80?
14	What is the perimeter of a square, if the area is 36 cm ² ?
15	What is the quotient of 24,228 and 12?
16	If you have 9 quarters, 3 dimes, 2 nickels, and 8 pennies. How much total money do you have in dollars?
17	Harry has a bag of treats. Inside he has 4 chocolate frogs, 5 cauldron cakes, and 3 boxes of pumpkin pasties. If Harry reaches in and pulls out a treat at random, what is the probability (as a common fraction) that he will choose a chocolate frog?
18	Evaluate $\frac{1}{2} + \frac{1}{4}$. Write your answer as a reduced fraction.

19	Alfredo, Natalie, Luz, and Alex are on a Math Is Cool team together. How many different ways can they arrange themselves in a row of 4 desks one behind the other for the Team Relay?
20	In the sport of Quidditch, each goal earns your team 10 points. Catching the golden snitch scores 150 points and is caught only once per game. The team with the most points wins. If the other team catches the golden snitch, what is the minimum number of goals that your team must score to win the game?
21	Find the area of the following figure. <div style="text-align: center;"> </div>
22	Several friends are playing Fortnite. Trevor found twice as many shield potions as Salvador, who found $\frac{2}{3}$ as many shield potions as Maggie. Maggie found 5 times as many shield potions as Nikki. If Nikki found 3 shield potions, how many shield potions did Trevor find?
23	Dobby has 5 blue socks, 6 red socks, and 8 green socks. If all of his socks are in a basket and Dobby closes his eyes, what is the smallest number of socks Dobby will need to take out of the basket to guarantee he has two of the same color?
24	Jennette is making brownies for her whole class. If one batch of brownies calls for 2 cups of flour, $\frac{2}{3}$ cups of butter, and 1 egg, how many cups of butter will Jennette need to use if she makes 6 batches of brownies?
25	Express $\frac{6}{25}$ as a decimal to the nearest hundredth.
26	What is $\frac{17}{4}$ as a percent?
27	A triangle has sides that are 4 in. and 6 in. long. If all side lengths must be whole numbers, what is the longest possible length of the third side?
28	Rebecca reads a lot of books. She decides to give away the books she has already read. She gives half of the books to Lauren. Then she gives $\frac{1}{3}$ of the remaining books to Alina. Then she gives the last 6 books to Derrick. How many books did she give away total?
29	What is the measure of angle ACD (marked with the arc)? <div style="text-align: center;"> </div>
30	The sum of my number and 24 is the same as the product of my number and 3. What is my number?

Challenge Questions: 3 pts each

31	What is the average of all counting numbers from 1 through 40, inclusive? Answer as a decimal.
32	Kaylee practices the piano for 40 minutes starting at 10 AM. How many degrees will the minute hand on an analog clock move while she is practicing?
33	How many triangles can be drawn following the lines of this figure? 
34	The operator @ is defined as $y @ z = (y - z) \times (z - y) \times y^z$. Evaluate the expression $5 @ 2$.
35	A Gringott's goblin is putting 60 equally sized gold coins into 4 bags. If he puts the coins in so that each bag has 2 more coins than the bag before it, how many coins are in the heaviest bag?
36	A rectangle has a length of 6 and a width of 7. If the length is decreased to $\frac{1}{3}$ of its original length and the width is increased by a factor of 4, what is the ratio of the area of the new rectangle to the old one? Give your answer as a reduced fraction.
37	At a hot pepper eating contest, one fourth of a habanero pepper is considered equal to one jalapeno pepper. One tenth of a Spanish Naga Pepper is equivalent to one habanero pepper. One jalapeno pepper is equivalent to five poblano peppers. In the contest, 1 jalapeno pepper = 5 points. Anurak wins the contest by eating one tenth of a Spanish Naga Pepper, three quarters of a habanero pepper, 2 jalapenos, and 1 poblano pepper. How many points did Anurak earn?
38	Pacman is essentially a circle with $\frac{1}{6}$ of the circle missing to make his mouth. If Pacman's diameter is 12 cm, what is his area? Please leave your answer in terms of π . 
39	Your team has a random 50% chance of answering any single College Bowl question correctly. What is the probability, as a fraction, that your team will answer all 10 College Bowl questions correctly.
40	In the picture shown, each small block is 5 mm on each side. Assuming the tower is sitting flat on a table and you can see around all four sides of the tower, but cannot see under any of the cubes, what is the "visible" surface area of the figure? 

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Total # Correct:

KEY

4th Grade Individual Contest - Score Sheet

DO NOT WRITE IN SHADED REGIONS

	Answer	1 or 0	1 or 0
1	321		
2	44 [cm]		
3	8		
4	6 [sides]		
5	200 [cm]		
6	29		
7	6 [factors]		
8	[\$]3.75		
9	52,000		
10	27		
11	20 [minutes]		
12	11:08 AM		
13	12		
14	24 [cm]		
15	2019		
1 - 15 Total			

	Answer	1 or 0	1 or 0
16	[\$]2.73		
17	4/12 or 1/3		
18	$\frac{3}{4}$		
19	24 [ways]		
20	16 [goals]		
21	28[cm ²]		
22	20 [potions]		
23	4 [socks]		
24	4 [cups]		
25	0.24		
26	425 [%]		
27	9 [in]		
28	18 [books]		
29	115 [degrees]		
30	12		
16 - 30 Total			

	Answer	1 or 0	1 or 0
31	20.5		
32	240 [degrees]		
33	12 [triangles]		
34	-225		
35	18 [gold coins]		
36	4/3		
37	46 [points]		
38	30 π [cm ²]		
39	1/1024		
40	1625 [mm ²]		
31-40 Total:			

4th Grade

#date

Scorers: Just score as 0 or 1 and add up those values. (i.e. just work with number correct).

Math is Cool" Championships - 2018-2019

4th Grade - #date

Final Score:

First Score
(out of 20)

Student Names _____

Proctor Name _____ Room # _____

SCHOOL NAME _____ **Team #** _____

TEAM MULTIPLE CHOICE - 15 minutes - 10 problems - 20% of team score

*This test is the only test where you will be penalized for incorrect responses. You will receive 2 points for a correct letter response, 0 points for leaving it blank and -1 point for an incorrect response. When you are prompted to begin, tear off the colored sheet, pass out a copy of the test to each team member, and begin testing. **Since this is a multiple-choice test, ONLY a letter response should be listed as an answer on the answer sheet.***

DO NOT WRITE IN SHADED REGIONS

Answer		Scorer 2 -1, 0 or 2	Scorer 1 -1, 0 or 2
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

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4th Grade - #date

Team Multiple-Choice Contest

Use this information for Questions 1 to 4. The Seattle-to-Portland Bike Ride (called the STP) is a huge event that takes place every year. Up to 8,000 cyclists start in Seattle and bike all the way to Portland along a 205-mile-long route. Along the course, there are a total of 130 miles on level ground, 60 miles downhill, and the rest of the course is uphill.

1

The STP riders spend 155 miles of the 205-mile trip riding through Washington, and the rest of the distance riding through Oregon. What fraction of a rider's distance is spent in Washington? Answer as a reduced fraction.

A) $\frac{31}{41}$ B) $\frac{10}{41}$ C) $\frac{10}{31}$ D) $\frac{31}{10}$ E) Answer not given.

2

When he gets to the end of the race in Oregon, Eric decides to buy some STP souvenirs. He purchases a shirt for \$32.50, a water bottle for \$11.75, and a key chain for \$5.10. If he pays with a \$50 bill, how many dollars will he receive in change.

A) \$0.55 B) \$0.65 C) \$1.55 D) \$1.65 E) Answer not given.

3

When biking the STP, Eric can travel 20 miles per hour on level parts of the course, but he can only go 5 miles per hour when biking uphill. He goes 30 miles per hour on downhill stretches. How many total hours will Eric spend riding?

A) 6.5 B) 8 C) 11.5 D) 12 E) Answer not given.

4

Each STP rider is assigned a unique number "bib number" (1-8000 inclusive) that they display on their back during the ride. Bib numbers 100 through 8000 are included with the regular price of registration. However, The Cascade Bicycle Club charges an extra fee for 1- and 2-digit bib numbers. A 1-digit bib number costs an additional \$300 and a 2-digit bib number costs an additional \$100 over the standard registration fee. How much in extra fees does the Cascade Bicycle Club collect if all 1- and 2-digit bib numbers are sold?

A) \$10,800 B) \$11,600 C) \$11,700 D) \$12,000 E) Answer not given.

Use this information for Questions 5-6. The town of George, Washington holds the World Record for baking the World's Largest Cherry Pie. They bake their giant pie every year on the 4th of July. To make the pie, the town uses an 8-foot square pie pan filled with 75 gallons of cherry pie filling. A total of \$800 is budgeted for pie ingredients, but they give the 1500 pieces of cherry pie away to visitors for free, one piece per person.

5

Last year, all 1500 pieces of pie were eaten. 60% went to visitors from Washington State. Of the visitors from Washington, one-third came from west of the Cascades. Ten percent of the Washington visitors from east of the Cascades came from Grant County, Washington. How many pieces of pie were eaten by residents of Grant County?

A) 900 B) 500 C) 100 D) 60 E) Answer not given.

Use this information for Questions 5-6. (This is the same information from the previous page.) The town of George, Washington holds the World Record for baking the World's Largest Cherry Pie. They bake their giant pie every year on the 4th of July. To make the pie, the town uses an 8-foot square pie pan filled with 75 gallons of cherry pie filling. A total of \$800 is budgeted for pie ingredients, but they give the 1500 pieces of cherry pie away to visitors for free, one piece per person.

6 The pie takes much longer to make than a normal pie. The bakers need $1\frac{1}{2}$ hours to build the crust and $\frac{3}{4}$ hour to open all the cans of pie filling and pour them into the pie. It takes all the bakers 10 minutes to carefully move the pie into the oven. Then, because the pie is so large, it must cook for $5\frac{1}{2}$ hours at 250 degrees. Once removed from the oven, the pie needs to cool for 1 hour and 55 minutes before it can be moved to the fairgrounds. It takes $\frac{3}{4}$ hour to move the pie to the truck and transport it to the celebration. If pie serving is scheduled to start at 9:25 AM, what is the latest that the baking team can start and have the pie ready on time?

A) 1:50 AM B) 12:35 AM C) 11:20 PM D) 10:50 PM E) Answer not given.

Use this information for Questions 7-10 to 8. The following table gives the distances, temperature, and apparent magnitude of the seven stars in the Big Dipper Constellation, though some of the information is missing (as indicated by the blank cells in the table). In the SI system, a change in temperature of size 1 Kelvin (K) equals a change of 1 °C and these two temperature scales align at 0 °C = 273 K. Apparent Magnitude is a relative measure of a star's brightness when seen from Earth, and is thus unitless. Use the information provided to solve the following questions.

Stars	Distance from our Sun (Light Years)	Temperature (Kelvin)	Apparent Magnitude
Alkaid		16,820	+1.86
Mizar	84	9,000	+2.04
Alioth	82	9,985	+1.77
Megrez	58	9,480	+3.31
Phecda	84	9,355	+2.44
Dubhe	124		+1.79
Merak	80	9,377	+2.37

7 Dubhe has the coolest temperature of any of the stars in the Big Dipper. If the range of temperatures of stars in the Big Dipper is 12,160 K, what is the temperature of Dubhe?

A) 28980 B) 12,160 C) 6,080 D) 4,660 E) Answer not given.

8 What is Merak's temperature when converted from Kelvin to degrees Celsius (°C)?

A) 9,004 B) 9,650 C) 9,628 D) 9,751 E) Answer not given.

9 Astronomers use a characteristic called "apparent magnitude" to compare the brightness of stars as they appear from the Earth. Alioth is the brightest star in the Big Dipper when viewed from Earth. Which star in the Big Dipper is the dimmest?

A) Megrez B) Mizar C)Phecda D) Dubhe E) Answer not given.

10 If the average distance from the Sun for the three stars Alkaid, Dubhe, and Mizar is 104 light years, how far is Alkaid from the Sun, in light years?

A) 84 B) 92 C) 104 D) 120 E) Answer not given.

Math is Cool" Championships - 2018-2019

4th Grade - #date

Final Score:

KEY

Student Name _____

Proctor Name _____ Room # _____

SCHOOL NAME _____ **Team #** _____

TEAM MULTIPLE CHOICE - 15 minutes - 10 problems - 20% of team score

*This test is the only test where you will be penalized for incorrect responses. You will receive 2 points for a correct letter response, 0 points for leaving it blank and -1 point for an incorrect response. It is not necessary to write your personal name on the test, but you may put it at the bottom of the test so your coach will be able to give you back the correct test. This test is taken individually, but it is part of your team score, including zeros for missing team members. Your team score will be calculated by taking the mean of your four team members' scores. When you are prompted to begin, tear off the colored sheet and begin testing. **Since this is a multiple choice test, ONLY a letter response should be indicated as an answer on the answer sheet.** No talking during the test.*

DO NOT WRITE IN SHADED REGIONS

Answer	
1	A
2	B
3	C
4	C
5	D
6	D
7	D
8	E (9,104 K)
9	A
10	C

"Math is Cool" Championships - 2018-2019

4th Grade - #date

Final Score:

First Score

(out of 10)

SCHOOL NAME _____ Team # _____

Proctor Name _____ Room # _____

Team Contest - Score Sheet

TEAM TEST - 15 minutes - 30% of team score

When you are prompted to begin, tear off the colored sheet and give a copy of the test to each of your team members and begin testing. Each problem is scored as 1 or 0. Record all answers on the colored answer sheet.

DO NOT WRITE IN SHADED REGIONS

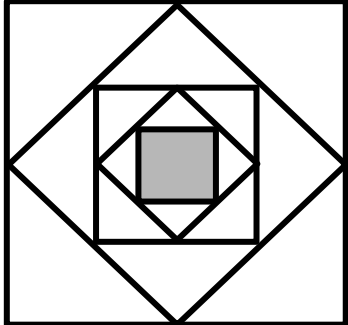
Answer		Scorer 2 1 or 0	Scorer 1 1 or 0
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

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4th Grade - #date

Team Contest

1	What is the largest prime number that can be squared with a result less than 100?
2	You buy a large platter of 96 sandwich wraps to share with your team at math practice. If 16 people show up to math practice, how many wraps does each person get?
3	Last year, Hermione's last day of exams at Hogwarts School was June 8th. If the following school year begins on September 1st, how many weeks is her summer vacation?
4	Calculate: $25 + 15 \times 3 - (8 - 11)$
5	When Thanos holds the Infinity Gauntlet and snaps his fingers, half of all Math Is Cool competitors disappear. If there are currently 352 competitors, how many will be left if Thanos snaps his fingers 5 times?
6	For your school's robotics team, it takes 6 students 2 days to program 1 robot mission. Assuming they work at the same rate, how many days does it take 3 students to program 4 missions?
7	A human's recommended daily caloric intake is 2000 kilocalories. A hobbit requires $3\frac{1}{2}$ times as many kilocalories as a human every day. If hobbits eat 6 meals every day, what is the average number of kilocalories a hobbit should eat at every meal, rounded to the nearest whole kilocalories?
8	Floean Fortescue's Ice Cream Parlour has 10 flavors of ice cream, 4 flavored syrup toppings, 7 toppings to sprinkle on top, and 3 types of cherries for the top. Every sundae has one flavor of ice cream, one syrup topping, one sprinkle topping, and 1 cherry. How many different sundae combinations could a customer build?
9	Biff and Eho are having a picnic at Columbia Park in the Tri-Cities. Biff has to leave at 11:30 AM to go to math team practice. Eho stays one hour longer and walks on his own to Sacajawea Park on a route that is 12 km long. If Eho walks at a speed of 2 km in 25 minutes, at what time will Eho arrive at Sacajawea Park?
10	<p>The diagram below was made with an outer square that has a perimeter of 48 inches. The corners of the second square touch the midpoint of each side in the outer square. The third square has corners at midpoints of each side of the second square and so on. Find the area of the shaded square at the center of the diagram.</p> 

"Math is Cool" Championships - 2018-2019
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Final Score:

KEY

SCHOOL NAME _____ Team # _____

Proctor Name _____ Room # _____

Team Contest - Score Sheet

TEAM TEST - 15 minutes - 30% of team score

When you are prompted to begin, tear off the colored sheet and give a copy of the test to each of your team members and begin testing. Each problem is scored as 1 or 0. Record all answers on the colored answer sheet.

DO NOT WRITE IN SHADED REGIONS

Answer	
1	7
2	6 [wraps]
3	12 [weeks]
4	73
5	11 [competitors]
6	16 [days]
7	1167 [kilocalories or kcal]
8	840 [sundaes]
9	3:00 PM or 3 PM
10	9 [in ²]

"Math is Cool" Championships -- 2018-2019

4th Grade - #date

School: _____ Team # _____

Proctor: _____ Room # _____

PRACTICE RELAY

Answer for question # 1	Answer for question # 2	Answer for question # 3	Answer for question # 4
1 or 0	1 or 0	1 or 0	2 or 0

Fill in your answer and pass back to the next person.

"Math is Cool" Championships -- 2018-2019

4th Grade - #date

School: _____ Team # _____

Proctor: _____ Room # _____

PRACTICE RELAY

Answer for question # 1	Answer for question # 2	Answer for question # 3	Answer for question # 4
1 or 0	1 or 0	1 or 0	2 or 0

Fill in your answer and pass back to the next person.

"Math is Cool" Championships -- 2018-2019

4th Grade - #date

School: _____

Team # _____

Proctor: _____

Room # _____

RELAY #1

Answer for question # 1	Answer for question # 2	Answer for question # 3	Answer for question # 4
1 or 0	1 or 0	1 or 0	2 or 0

Fill in your answer and pass back to the next person.

"Math is Cool" Championships -- 2018-2019

4th Grade - #date

School: _____

Team # _____

Proctor: _____

Room # _____

RELAY #1

Answer for question # 1	Answer for question # 2	Answer for question # 3	Answer for question # 4
1 or 0	1 or 0	1 or 0	2 or 0

Fill in your answer and pass back to the next person.

"Math is Cool" Championships -- 2018-2019

4th Grade - #date

School: _____ Team # _____

Proctor: _____ Room # _____

RELAY #2

Answer for question # 1	Answer for question # 2	Answer for question # 3	Answer for question # 4
1 or 0	1 or 0	1 or 0	2 or 0

Fill in your answer and pass back to the next person.

"Math is Cool" Championships -- 2018-2019

4th Grade - #date

School: _____ Team # _____

Proctor: _____ Room # _____

RELAY #2

Answer for question # 1	Answer for question # 2	Answer for question # 3	Answer for question # 4
1 or 0	1 or 0	1 or 0	2 or 0

Fill in your answer and pass back to the next person

"Math Is Cool #Champs - 2018-19, 4th Grade

Practice Relay - Person 1	
Question 1	What is 8 times 4?

"Math Is Cool #Champs - 2018-19, 4th Grade

4th Grade	Practice Relay - Person 1
Question 1	What is 8 times 4?

"Math Is Cool #Champs - 2018-19, 4th Grade

Practice Relay - Person 2

Question 1

What is 8 times 4?

Question 2

What is TNYWG divided by 2?

"Math Is Cool #Champs - 2018-19, 4th Grade

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Practice Relay - Person 2

Question 1

What is 8 times 4?

Question 2

What is TNYWG divided by 2?

"Math Is Cool #Champs - 2018-19, 4th Grade

Practice Relay - Person 3

Question 2

What is TNYWG divided by 2?

Question 3

What is the positive square root of TNYWG?

"Math Is Cool #Champs - 2018-19, 4th Grade

Practice Relay - Person 3

Question 2

What is TNYWG divided by 2?

Question 3

What is the positive square root of TNYWG?

"Math Is Cool #Champs - 2018-19, 4th Grade

Practice Relay - Person 4

Question 3

What is the positive square root of TNYWG?

Question 4

What is TNYWG plus 24?

"Math Is Cool #Champs - 2018-19, 4th Grade

Practice Relay - Person 4

Question 3

What is the positive square root of TNYWG?

Question 4

What is TNYWG plus 24?

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Relay #1 - Person 1

Question 1

How many sides does a nonagon have?

"Math Is Cool #Champs - 2018-19, 4th Grade

Relay #1 - Person 1

Question 1

How many sides does a nonagon have?

"Math Is Cool #Champs - 2018-19, 4th Grade

Relay #1 - Person 2

Question 1 How many sides does a nonagon have?

Question 2 A square has an area of TNYWG. What is the length of one of the square's sides?

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Relay #1 - Person 2

Question 1 How many sides does a nonagon have?

Question 2 A square has an area of TNYWG. What is the length of one of the square's sides?

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Relay #1 - Person 3

Question 2 A square has an area of TNYWG. What is the length of one of the square's sides?

Question 3 I have TNYWG dollars. If I have 7 quarters and 6 dimes, how many nickels do I have?

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Relay #1 - Person 3

Question 2 A square has an area of TNYWG. What is the length of one of the square's sides?

Question 3 I have TNYWG dollars. If I have 7 quarters and 6 dimes, how many nickels do I have?

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Relay #1 - Person 4

Question 3 I have TNYWG dollars. If I have 7 quarters and 6 dimes, how many nickels do I have?

Question 4 Through how many degrees will the minute hand of an analog clock move in TNYWG minutes?

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Relay #1- Person 4

Question 3 I have TNYWG dollars. If I have 7 quarters and 6 dimes, how many nickels do I have?

Question 4 Through how many degrees will the minute hand of an analog clock move in TNYWG minutes?

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Relay #2 - Person 1

Question 1

What is the product of 4 and 50?

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Relay #2 - Person 1

Question 1

What is the product of 4 and 50?

"Math Is Cool #Champs - 2018-19, 4th Grade

Relay #2 - Person 2

Question 1 What is the product of 4 and 50?

Question 2 If you count backward from TNYWG by 17's what is the smallest positive number you will say?

"Math Is Cool #Champs - 2018-19, 4th Grade

Relay #2 - Person 2

Question 1 What is the product of 4 and 50?

Question 2 If you count backward from TNYWG by 17's what is the smallest positive number you will say?

"Math Is Cool #Champs - 2018-19, 4th Grade

Relay #2 - Person 3

Question 2 If you count backward from TNYWG by 17's what is the smallest positive number you will say?

Question 3 Farmer Ted looks out his window and sees only ducks and cows. In total, he counts TNYWG heads and 32 legs. How many ducks are in his farm yard?

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Relay #2 - Person 3

Question 2 If you count backward from TNYWG by 17's what is the smallest positive number you will say?

Question 3 Farmer Ted looks out his window and sees only ducks and cows. In total, he counts TNYWG heads and 32 legs. How many ducks are in his farm yard?

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Relay #2 - Person 4

Question 3

Farmer Ted looks out his window and sees only ducks and cows. In total, he counts TNYWG heads and 32 legs. How many ducks are in his farm yard?

Question 4

The binary (or base 2) number system uses only 2 digits (0, 1) rather than our ordinary 10-digit (0-9) number system, but otherwise operates the same way. For examples of the first 4 counting numbers see the table. What would TNYWG be as a binary (base 2) number?

Base 10	Base 2
1	1
2	10
3	11
4	100

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Relay #2 - Person 4

Question 3

Farmer Ted looks out his window and sees only ducks and cows. In total, he counts TNYWG heads and 32 legs. How many ducks are in his farm yard?

Question 4

The binary (or base 2) number system uses only 2 digits (0, 1) rather than our ordinary 10-digit (0-9) number system, but otherwise operates the same way. For examples of the first 4 counting numbers see the table. What would TNYWG be as a binary (base 2) number?

Base 10	Base 2
1	1
2	10
3	11
4	100

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Robert Dirks' Relay Contest - Questions & Key

RELAYS - 5 minutes per relay - 15% of team score

*There is no talking during this event and you must always be facing forward. Person #1 will be given an answer sheet(s) and will need to fill out the top. The proctor will hand out a strip of paper to each person. These need to be face down on your desk until it is time for the relay to start. Once the relay begins, everyone may turn over their strip of paper and begin working. You may write on the strip of paper to come up with your answer. However, when person #1 figures out his/her problem, he/she will record **just his/her final answer** on the answer sheet and pass only the answer sheet back to the person behind. This continues until person #4 puts an answer on the answer sheet and gives it to the proctor. A correct answer from person #1, #2 and #3 is worth 1 point each. A correct answer from person #4 is worth 2 points making each relay worth 5 points. You will see the expression **TNYWG** [Proctor: write this on the board] which means: "the number you will get". This is where you put your teammate's answer that they pass back to you, and then you should be able to solve your question. Once the relay begins, turn over your strip of paper and **make sure you have the right person number**. Remember, no talking and remain facing forward to avoid being disqualified!*

	Practice Relay	Answer
Person 1	What is 8 times 4?	32
Person 2	What is TNYWG divided by 2?	16
Person 3	What is the positive square root of TNYWG?	4
Person 4	What is TNYWG plus 24?	28
	Relay #1	Answer
Person 1	How many sides does a nonagon have?	9 [sides]
Person 2	A square has an area of TNYWG. What is the length of one of the square's sides?	3 [units]
Person 3	I have TNYWG dollars. If I have 7 quarters and 6 dimes, how many nickels do I have?	13 [nickels]
Person 4	Through how many degrees will the minute hand of an analog clock move in TNYWG minutes?	78 [degrees]
	Relay #2	Answer
Person 1	What is the product of 4 and 50?	200
Person 2	If you count backward from TNYWG by 17's what is the smallest positive number you will say?	13
Person 3	Farmer Ted looks out his window and sees only ducks and cows. In total, he counts TNYWG heads and 32 legs. How many ducks are in his farm yard?	10 [ducks]
Person 4	The binary (or base 2) number system uses only 2 digits (0, 1) rather than our ordinary 10-digit (0-9) number system, but otherwise operates the same way. For examples of the first 4 counting numbers see the table. What would TNYWG be as a binary (base 2) number?	1010

Base 10	Base 2
1	1
2	10
3	11
4	100

"Math is Cool" Championships -- 2018-2019

KEY

4th Grade - #date

PRACTICE RELAY

Answer for person # 1	Answer for person # 2	Answer for person # 3	Answer for person # 4
32	16	4	28
1 or 0	1 or 0	1 or 0	2 or 0

RELAY # 1

Answer for person # 1	Answer for person # 2	Answer for person # 3	Answer for person # 4
9 [sides]	3 [units]	13 [nickels]	78 [degrees]
1 or 0	1 or 0	1 or 0	2 or 0

RELAY # 2

Answer for person # 1	Answer for person # 2	Answer for person # 3	Answer for person # 4
200	13	10 [ducks]	1010
1 or 0	1 or 0	1 or 0	2 or 0

"Math is Cool" Championships -- 2018-2019

4th Grade

School: _____ Team # _____

Proctor: _____ Room # _____

College Bowl #1 10 Possible	College Bowl #2 10 Possible	College Bowl #3 10 Possible

Do not use tally marks.

"Math is Cool" Championships -- 2018-2019

4th Grade

School: _____ Team # _____

Proctor: _____ Room # _____

College Bowl #1 10 Possible	College Bowl #2 10 Possible	College Bowl #3 10 Possible

Do not use tally marks.

"Math is Cool" Championships - 2018-2019

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COLLEGE KNOWLEDGE BOWL ROUND #1 - SET 1

#	Problem	Answer
1	What is the quotient of 48 and 4?	12
2	How many even prime numbers are between 22 and 56?	0 [numbers]
3	A niffler can find 25 gold coins in 20 minutes. How many gold coins can a niffler find in an hour?	75 [coins]
4	Alondra practices the piano for two hours on each odd numbered day in May. How many hours will she practice during May?	32 [hours]
5	Ramona has a full carton of a dozen eggs. Ten eggs are hard-boiled and two are raw. Ramona chooses one egg at random and smashes it on her head. As a fraction, what is the probability that she will end up with raw egg in her hair?	2/12 or 1/6
6	Today is Friday. What day of the week will it be 34 days from now?	Thursday
7	What is 30% of 70?	21
8	What is the greatest common factor of 42 and 60?	6
9	What is the area of a rectangle with sides 9 and 12?	108 [units ²]
10	How many yards are in 24 feet?	8 [yards]

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COLLEGE KNOWLEDGE BOWL ROUND #2 - SET 2

#	Problem	Answer
1	What is the positive difference of 24 and 38?	14
2	How many centimeters are in two-and-a-half meters?	250 [cm]
3	Susana drove 40 miles per hour for 90 minutes. How many miles did Susana travel?	60 miles
4	What is the product of 199 and 201?	39,999
5	Ramona and Howie are decorating an extra-large carton of 18 Easter Eggs. Half of the eggs belong to Howie and the rest are Ramona's. Ramona gives one-third of her eggs to her sister Beezus and then gives 4 eggs to her sister Roberta. How many eggs does Ramona have left?	2 [eggs]
6	Your math team is celebrating Pi-Day and you have 9 pies cut into 6 pieces each. If there are 13 kids on your team and everyone gets the same number of pieces, how many pieces will be left over?	2 [pieces]
7	The money you have in your pocket consists of only quarters. How many quarters will you need to give the cashier to pay for a fidget spinner that costs \$5.36?	22 [quarters]
8	What the sum of five plus fifty plus five-hundred plus five-thousand plus six?	5561
9	What is the largest prime number less than 20?	19
10	What is the positive square root of 121?	11

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COLLEGE KNOWLEDGE BOWL ROUND #3 - SET 3

#	Problem	Answer
1	Sophie Foster's favorite number is one more than half of 36. What is Sophie's favorite number?	19
2	Two angles of a triangle are 30 degrees and 50 degrees. What is the measure of the third angle?	100 [degrees]
3	What is the area of a triangle with a base of 6cm and a height of 12 cm?	36 [sq. cm]
4	The students from Math Town Academy got the following scores on the Mental Math portion of their Math is Cool Competition: 3, 4, 8, 3, 4, 1, 7, 3. What is the mode?	3
5	Jack and Annie are cleaning their treehouse. Jack made a stack of 6 books and Annie made a stack with twice as many books as Jack. How many books do they have all together?	18 [books]
6	What is the product of the 2nd prime number and the 5th prime number?	33
7	In terms of pi, what is the area of a circle with a diameter of 10 inches?	25π [sq. in]
8	What number do you get when you multiply all the digits in two-thousand-nineteen?	0
9	Tara has 5 dollars to buy pencils for her Math Is Cool Team. If each pencil costs 30 cents, how many pencils can she buy?	16 [pencils]
10	What is eight squared?	64

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COLLEGE KNOWLEDGE BOWL ROUND #4 - SET 4

#	Problem	Answer
1	What is the positive difference of 534 and 711?	177
2	What is the positive square root of 81?	9
3	The Space Needle is 605 feet tall. Steve is 5 feet tall. The Space Needle is how many times taller than Steve?	121 [times taller]
4	It takes a nuffle 15 seconds to make a timble. How many minutes will it take a nuffle to make 60 timbles?	15 [minutes]
5	Jack and Annie return from an adventure and find a coded message in their Tree House. Together Jack and Annie can decode 7 words in 3 minutes. How long in minutes will it take them to decode a 91 word message?	39 [minutes]
6	If an analog clock reads 12 o'clock sharp, how many times during the next 12 hours will the hour hand pass the minute hand?	11 [times]
7	The measure of angle "A" is 57 degrees. What is the measure of its complementary angle?	33 [degrees]
8	Two numbers add up to 20. The larger number is 3 times as big as the smaller number. What is the smaller number?	5
9	Convert zero-point-two into a common fraction.	2/10 or 1/5
10	What is the maximum remainder you can get when dividing by 7?	6

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COLLEGE KNOWLEDGE BOWL ROUND #5 - SET 5

#	Problem	Answer
1	What is negative 1 times negative 1 times negative 1 times negative 1?	[positive] 1
2	How many quarts are in 3 gallons?	12 [quarts]
3	What is the next term in the arithmetic sequence that starts: 7, 14, 21, 28?	35
4	If it is March now, what month will it be 128 months from now?	November
5	Sarah has 3 pink shirts, 2 red shirts, 7 white shirts, and 6 black shirts in her closet. If she picks a shirt at random, what is the probability that it is a red shirt, as a common fraction?	2/18 or 1/9
6	What is the fraction seventeen twenty-fifths written as a decimal to the nearest hundredth?	0.68 "zero point six eight"
7	Karen writes haiku poems for a class at school. A single haiku poem consists of a 5 syllable line, a 7 syllable line, and another 5 syllable line. If Karen has written 51 syllables of haiku, how many poems has she written?	3 [poems]
8	On her last 4 math quizzes, Andrea got scores of 15, 20, 25, and 18. What is the median of her test scores?	19
9	What is 192 plus 4820?	5,012
10	What is three-fourths of 16?	12

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COLLEGE KNOWLEDGE BOWL ROUND #6 - SET 6

#	Problem	Answer
1	What is the product of 4 and 18 ?	72
2	A marble falls from a height of 7 feet. When it hits the ground, it rolls 2 times that distance. How far, in feet, did the marble move in total?	21 [feet]
3	Sean the Snail crawls a total 4 feet and 3 inches. How far is this in inches?	51 [inches]
4	Milo the dog walks 90 feet per minute. How many feet will he walk in 40 seconds?	60 [feet]
5	What angle is supplementary to 128 degrees?	52 [degrees]
6	Frodo has a ring with a radius of 8mm. In terms of pi, what is the circumference of Frodo's ring?	16π [mm]
7	You choose a single card from a standard deck of playing cards. What is the probability that you will draw a red card?	$\frac{1}{2}$ (or 26/52 or equivalent)
8	How many dollars do I have, if I have 3 quarters, 2 dimes, 3 nickels, and 8 pennies?	[\$] 1.18
9	I ate my bagel at 8:32 AM this morning. It is now 12:34 PM. How much time has passed since I ate my bagel? If your answer is not a whole number of hours, give your answer in hours and minutes.	4 hours and 2 minutes
10	A palindrome is a number that reads the same backward and forward. For example 121 is a palindrome. What is the largest 3-digit palindrome?	999

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COLLEGE KNOWLEDGE BOWL ROUND - EXTRA

#	Problem	Answer
1	What is the remainder when you divide ten-thousand-five hundred-sixty-two by five?	2
2	An elephant is 3 meters and 24 centimeters tall. How tall is the elephant in centimeters?	324 [cm]
3	How many vertices does a cube have?	8 [vertices]
4	A triangle has 2 angles that measure 25 degrees each. What is the measure of the 3rd angle?	130 [degrees]
5	What is 15% of 120?	18

Extra