

ACCU-SCAN ABF-815

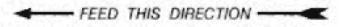
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NAME _____

SUBJECT _____

KEY	1	2	3	5
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3	a	b	c	d
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13	a	b	c	d
14	a	b	c	d
15	a	b	c	d

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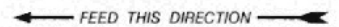
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15	a	b	c	d

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20__ Shoreline Math Olympiad
4th Grade Mental Math Test # 1
Answer Sheet

School: _____

Team #: _____

Student's Full Name (print Legibly!): _____

1)

2)

3)

***Note:** only write down the ANSWER!

All figuring is to be done in your head

If the scorers notice ANY computations on this answer sheet, you WILL receive zero points!

20__ Shoreline Math Olympiad
4th Grade Mental Math Test # 1
Answer Sheet

School: _____

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Student's Full Name (print Legibly!): _____

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Mental Math Questions

on the next page

(Proctor Only.

No peeky-peeky.)

2015 Shoreline Math Olympiad
Fourth Grade – Mental Math 1

1. Divide 24 by 8. Then multiply that result by 60. What would one-half of that number be?

2. The number “27” has an even number of factors: 1, 3, 9, and 27 (4 factors). The number “36” has an odd number of factors: 1, 2, 3, 6, 12, 18, and 36 (7 factors). How many counting numbers less than 20 have an odd number of factors?

3. The dimensions of a rectangle are 10 cm by 100 cm. If a diagonal were drawn in the rectangle, creating 2 triangles, what would be the area, in square centimeters, of one of those triangles?

2015 Shoreline Math Olympiad
Fourth Grade – Mental Math 2

1. Harry used a \$50 bill to pay for \$13 worth of snacks for him and his friends. What is the maximum number of five dollar bills that he could have received for his change?

2. Multiply 3 by 100. Then multiply that by the tenth multiple of 100. What is the result?

3. At the start of a party, a whole pie was cut into 12 equal wedges. Two-thirds of the pie was eaten. Each of the remaining wedges were split into 2 equal thinner wedges. Three of those thinner wedges were then eaten. What fractional portion of the pie was left?

2015 Shoreline Math Olympiad

Fourth Grade – Individual Test 1

1. Ben delivers the same number of newspapers each day. Which equation will help find how many newspapers he delivers each day if he delivers 280 papers weekly?

- A. $7 \times \square = 280$ B. $7 \times 280 = \square$
C. $\square \times 280 = 7$ D. $7 + \square = 280$



2. What could be the dimensions of a rectangle whose area is 16 square inches?

- A. 16 inches by 1 inch B. 4 inches by 2 inches C. 3 inches by 13 inches D. 5 inches by 3 inches

3. 10 tens + 10 hundreds + 10 thousands = ?

- A. 1,110 B. 10,100 C. 11,010 D. 11,100

4. The product of two numbers is 24. Their sum could be

- A. 4 B. 14 C. 24 D. 80

5. If a ribbon sells for 30 cents a yard, what would be the cost of 9 feet of ribbon?

- A. 39 cents B. 90 cents C. 135 cents D. 270 cents



6. Which number is the smallest?

- A. 0.2 B. 2 C. 0.03 D. 0.123

7. How many cups of tea can the Mad Hatter serve from his teapot if his teapot holds a quart of tea?

- A. 2 B. 3 C. 4 D. 5



8. A number that has exactly two factors is called a prime number. How many prime numbers are there between 10 and 20?

- A. one B. two C. three D. four

9. How many more multiples of 2 than multiples of 4 are there between 5 and 45?

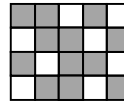
- A. 9 B. 10 C. 11 D. 12

10. How many 0.1 are there in $\frac{5}{2}$?

- A. 2 B. 5 C. 25 D. 250

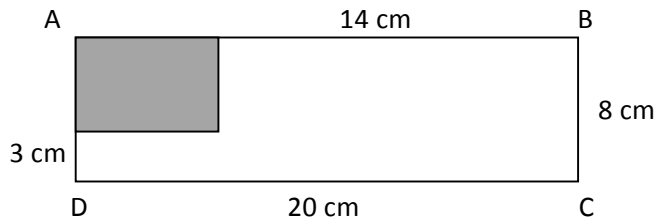
2015 Shoreline Math Olympiad Fourth Grade – Individual Test 1

11. A building with ten identical rooms had floors tiled as shown to the right. How many more gray tiles than white tiles were used to tile the entire building?



- A. 4 B. 14 C. 40 D. 120

12. What fractional part of rectangle ABCD is the shaded rectangle?



- A. $\frac{11}{80}$ B. $\frac{1}{4}$ C. $\frac{3}{16}$ D. $\frac{1}{3}$

13. A box of same-sized books could completely fill a 3 or 4 or 5 shelved bookshelf. How many books could be in the box?

- A. 30 B. 40 C. 50 D. 60

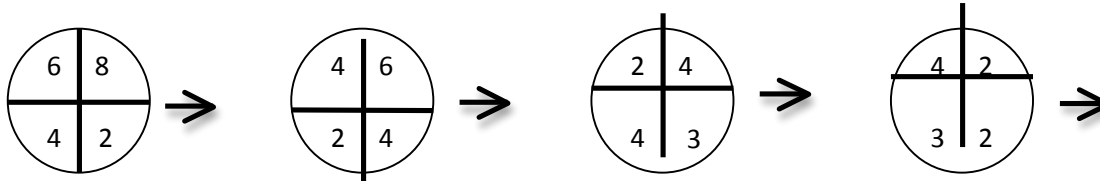


14. While cleaning his room, Oscar found five coins totaling 55 cents. How many of those coins were dimes?

- A. none B. one C. two D. three



15. If the numbers in the circle were rotated, what would come next in the pattern below?



- A. B. C. D.

2015 Shoreline Math Olympiad Fourth Grade – Individual Test 2

1. How many hundreds are there in 2,015?

- A. 0 B. 2 C. 20 D. 200

2. The product of 357 and an odd number is always

- A. an even number B. an odd number C. 357 D. less than 1,000

3. Which number is less than seven and eight hundredths?

- A. 7.8 B. 7.078 C. 7.08 D. 707

4. Four friends each took three licorice sticks out of a full jar of 15 licorice sticks. What fractional part of the licorice sticks remains in the jar?

- A. $\frac{1}{5}$ B. $\frac{1}{4}$ C. $\frac{3}{4}$ D. $\frac{4}{15}$



5. How many zeros are there in the product of $50 \times 40 \times 100$?

- A. 3 B. 4 C. 5 D. 6

6. The second place finisher in a race finished one-fourth of a second behind the winner. How many hundredths of a second is that?

- A. 1 hundredth B. 2 hundredths
C. 20 hundredths D. 25 hundredths



7. After buying 8 pencils at 20 cents each, Percy had 14 cents left. How much money did he have at first?

- A. \$0.42 B. \$1.64 C. \$1.74 D. \$2.72



8. Which of the numbers below is not the same as the other numbers?

- A. 1 tenth B. 1 hundredth C. 10 hundredths D. 100 thousandths

9. The median of seven whole numbers is 6 and the mode is 7. What is the smallest possible range of the numbers?

- A. 1 B. 2 C. 3 D. 4

10. Twenty-three classes each donated 47 cookies to a school party. About how many cookies were there at the party?

- A. 1,500 B. 1,000 C. 800 D. 700



2015 Shoreline Math Olympiad Fourth Grade – Individual Test 2

11. A party lasted from 11 AM to 3 PM. What fraction of the day was that time interval?
 A. $\frac{1}{6}$ B. $\frac{1}{5}$ C. $\frac{1}{4}$ D. $\frac{1}{3}$

12. For an hour, Alicia and Beth took turns riding the same bike. If Alicia rode for twice as long as Beth, what fractional part of the hour did Alicia ride?
 A. $\frac{1}{4}$ B. $\frac{1}{2}$ C. $\frac{2}{3}$ D. $\frac{3}{4}$



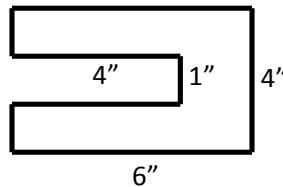
13. The results of a swimming event are in the table below. What finishing time was the median?

Swimmer	Finishing time (in seconds)
Alex	31.02
Bo	31.2
Chris	30.15
Don	32.0
Elton	32.02
Fess	31.31
Ginn	32.02

- A. 31.2 B. 31.31 C. 32.0 D. 32.02

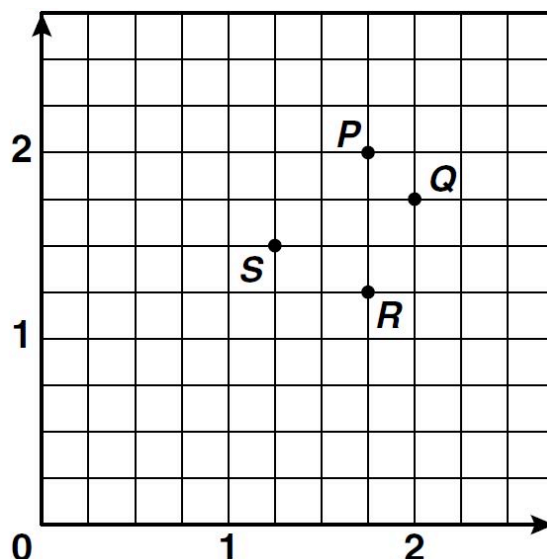
14. What is the area of the figure at the right?

- A. 12 sq. in.
 B. 15 sq. in.
 C. 20 sq. in.
 D. 24 sq. in.



15. Which point(s) in the grid has a smaller first coordinate than its second coordinate?

- A. Point P only
 B. Points P and Q
 C. Points R only
 D. Points S and P



2015 Shoreline Math Olympiad

Fourth Grade – Team Test 1

-
1. Find the difference between the largest and smallest three-digit number that can be formed using the digits below.

8 3 5

Answer: _____

-
2. A fruit stand vendor sold 42 pounds of apples, twice as many pounds of bananas than apples, 62 more pounds of cherries than bananas, and 15 fewer pounds of pears than cherries. What was the total weight of all fruits sold that day?

Answer: _____ pounds



-
3. There are 25 students including Garth standing in a line. The number of students behind Garth is 3 times the number of students ahead of him. What is Garth's position in the line?

Answer: _____



-
4. In a volleyball league, there are five teams. If each team plays a match against every other team only once, how many matches will be played?

Answer: _____ matches



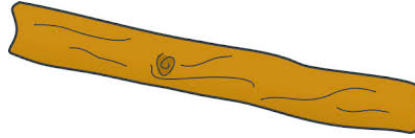
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2015 Shoreline Math Olympiad

Fourth Grade – Team Test 1

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5. Every 12-foot wooden plank needs to be cut into 18-inch lengths. If there are 8 planks and it takes 3 minutes to make 1 cut, how long (in *minutes*) does it take to complete all of the cuts?

Answer: _____ minutes

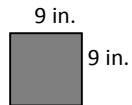


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6. Packages A and B together weigh 7 pounds. Packages A, B, and C together weigh 11 pounds. Packages A and C together weigh 8 pounds. What is the weight of package B?

Answer: Package B weighs _____ pounds



-
7. What is the largest perimeter (in inches) of a rectangle that can be formed by using twelve 9-inch square tiles?

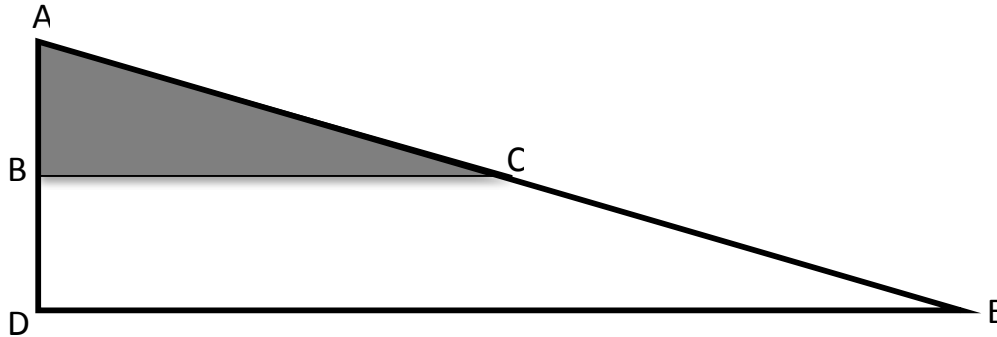


Answer: _____ inches

2015 Shoreline Math Olympiad

Fourth Grade – Team Test 2

-
1. B and C are midpoints (“halfway points”) of sides AD and AE respectively. What fractional part of the triangle ADE is the shaded triangle ABC?



Answer: _____

-
2. In the number below, the digits on the right side of the decimal point repeat the same pattern endlessly. What is the 61st digit to the right of the decimal point?

0.256325632563...

Answer: _____

-
3. If one were to write the whole numbers from 1 through 115, how many digits would need to be written?

Answer: _____ digits

-
4. On Earth Day, a 4th grade class plans to plant a shrub every 6 feet around the edge of the square front lawn of their school. The lawn measures 60 feet on each side. What will be the *maximum* number of shrubs they will plant?

Answer: _____ shrubs will be planted



-
5. In the 2-person game of Fan-Toe-C, the object is to be the first person to score 21 or more points. A player can only score 0, 2 or 5 points on a turn. List all of the scores less than 21 that are NOT possible for the losing player to have when the game ends?

Answer: _____ are NOT possible

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2015 Shoreline Math Olympiad

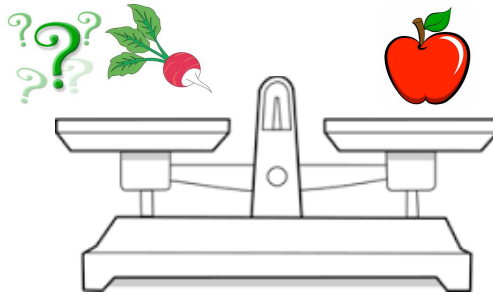
Fourth Grade – Team Test 2

-
6. A blue bucket and a red bucket had a total of 32 blocks. If 4 of the blocks were moved from the blue bucket to the red bucket, each bucket would have the same number of blocks. Before the blocks were moved, how many blocks were in each bucket?

Answer: Before they were moved,
there were _____ blocks in the blue bucket and
_____ blocks in the red bucket.


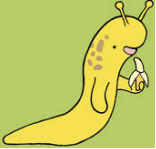
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7. Nine radishes weigh as much as two apples and one cantaloupe. Three radishes and one apple have the same weight as one cantaloupe. How many radishes have the same weight as one apple?

Answer: _____ radishes would have the same weight as one apple



2015 Shoreline Math Olympiad

Fifth Grade – Individual Test #1

-
1. Solve for X in the equation, $\frac{2}{3} + \frac{14}{4} = X$, where X represents a mixed number in simplest form.
- A. $1\frac{1}{4}$ B. $\frac{50}{12}$ C. $3\frac{3}{5}$ D. $4\frac{1}{6}$
-
2. Of the choices below, which shape has the most lines of symmetry?
- A. a square B. an equilateral triangle C. a scalene triangle D. a rectangle that is not a square
-
3. To help with the long, cold winter, Wadsworth the Walrus wanted to buy some tusk warmers. They cost \$7.35 per pair and he had \$50. If Wadsworth wanted to buy one fewer pair of tusk warmers than he had money for, how much money would he have left over to spend at the giant squid vs. whale fight later than evening?
- A. \$12.35 B. \$13.25 C. \$11.65 D. \$5.90
- 
-
4. To get to her home in Fern Valley, Sparklina the Faerie flew for 167 minutes atop her Venezuelan Poodle Moth. If she left on Monday at 10:17 p.m., when did she get home?
- A. Tuesday at 2:07 a.m. B. Tuesday at 12:24 a.m. C. Monday at 11:57 p.m. D. Tuesday at 1:04 a.m.
-
5. How many pounds do 2,000 tons of banana slugs weigh given that there are 16 ounces in a pound and 2,000 pounds in a ton?
- A. 32,000 B. 40,000 C. 640,000 D. 4 million
- 
-
6. Three of the statements listed below are true. Which of the statement about triangles listed below is false and made the triangle loving Telly Monster from Sesame Street cry?
- A. a scalene triangle has 3 different side lengths B. a right triangle cannot be an equilateral triangle
C. an obtuse triangle cannot be a scalene triangle D. an acute triangle can be an isosceles triangle
-
7. Which of the numbers shown below is the greatest prime factor of 510?
- A. 5 B. 17 C. 47 D. 255
-
8. Which reason could the rectangles use to say the parallelogram was different from themselves and not let him into their snooty club?
- A. He had only 4 sides B. He had 2 pairs of parallel sides
C. His interior angles weren't right D. He was a quadrilateral
-

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9.

Variables	Trial 1	Trial 2	Trial 3	Trial 4	Trial 5
T	0	8	32	98	200
V	0	4	8	14	20



When numbers are entered into the Mix-A-Tron Brain-O-Matic for one of the variables, T or V, a formula is used to calculate the value of the other variable. The results of 5 trials are shown above. Which expression listed below correctly represents the formula in use?

- A. $V = 10 \times T/2$ B. $T = V/4 + 2$ C. $V = T - 4 \times V$ D. $T = (V \times V)/2$

10. There will be an attack upon your garden, a single zombie at a time. In total, the attack will include 4 wearing buckets on their heads, 3 running with poles to vault with, 6 wearing traffic cones on their heads, 4 using screen doors as a shield, 2 holding onto balloons and floating through the air, and one really big one named Giagantor. What is the probability that the very first zombie to attack will be one who is wearing a traffic cone on its head?

- A. $1/3$ B. $3/10$ C. $4/9$ D. $6/19$

11. If $F = 2$, $H = 5$, $K = 1$, $T = 6$, and $Z = 3$, what does the expression $F + (H - K \times 2) + T \times Z$ equal?

- A. 33 B. 30 C. 54 D. 23

12. During each day of the week, Brewster noted the following number of deer playing around his home in the country: [8, 3, 8, 11, 14, 5, and 8] During this same period of time, Brewster also tracked how many antelope he saw playing around his home, as listed: [13, 18, 21, 18, 12, 19, 16] What is the difference between the ranges of the number of deer and antelope playing around his home?

- A. 8 B. 11 C. 2 D. 18

13. A straight line in the coordinate plane passes through points (3,5) and (15,25). What other point will this line pass through?

- A. (0,2) B. (21,35) C. (9,18) D. (35,45)

14. A perfect square of a whole number is the result of multiplying a whole number by itself. How many perfect squares are there that are less than 80 and greater than 4?

- A. 3 B. 6 C. 7 D. 9

15. Five pigeons found a large slice of bread. They decided to cut it up into equal sized pieces and each pigeon would get two such pieces for themselves. One pigeon gave one half of one of her pieces to a little old lady on a park bench. What fraction of the slice of bread did the little old lady get?

- A. $1/20$ B. $1/5$ C. $1/10$ D. $1/12$



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2015 Shoreline Math Olympiad Fifth Grade – Individual Test #2

1. What is the least common multiple of 35 and 14?

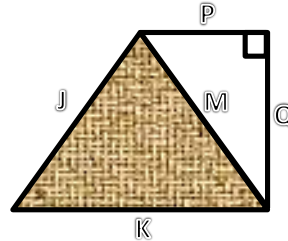
- A. 7 B. 490 C. 21 D. 70

2. Veronica had 3.7 kilos of lasagna. James gave her 0.07 of a kilo more, but later, Hal took away 2.001 kilos of her lasagna. How many kilos of lasagna did Veronica have left?

- A. 1.9 B. 1.769 C. 2.30 D. 1.620

3. Referring to the figure to the right, what is the formula for the area of the shaded portion?

- A. $J + M + K$ B. $(P \times K)/2 \times M$
 C. $(J \times Q)/(P + K^2)$ D. $(Q \times K)/2$



4. For someone standing in Shoreline, Washington, the Earth rotates at roughly 697 miles per hour. If you could stand on the equator of Saturn, your rotational speed would be roughly 31 times as fast. Which number below is the best approximation for how fast Saturn rotates at its equator?

- A. 31,000 m.p.h. B. 22,000 m.p.h. C. 16,500 m.p.h. D. 34,800 m.p.h.

5. Unlucky Lulu-Belle lives in a neighborhood where there are 12 cats who roam outdoors. 6 of the cats are white, 2 are black, 3 are orange, and one is blue for some reason. If any 2 of these cats cross her path each day, which best describes the likelihood that a black cat will cross her path today?



- A. certain B. likely C. unlikely D. impossible

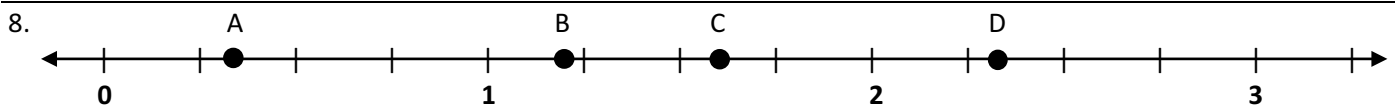


6. Ignoring any possible remainder, what is 8,291 divided by 17?

- A. 485^r4 B. 532 C. 487 D. 517

7. The unit, CCF, represents a hundred cubic feet of volume, and one CCF = 748 gallons of liquid. Mousezilla drinks an average of 3 CCF of liquid cheese each month. How many gallons of liquid cheese will Mousezilla drink in the first six months of the year?

- A. 13,464 B. 17,816 C. 6,732 D. 4,488



Which point on the number line shown above most closely represents the sum of $\frac{1}{3}$ and $\frac{6}{7}$.

- A. A B. B C. C D. D

– PLEASE TURN OVER –

9. The figure shown at the right is a parallelogram (not drawn to scale) with one side length of 6 units. If the remaining side lengths are also whole number units, which choice listed below is NOT a possible perimeter?



- A. 25 B. 30 C. 22 D. 48

10. Which inequality statement below is correct?

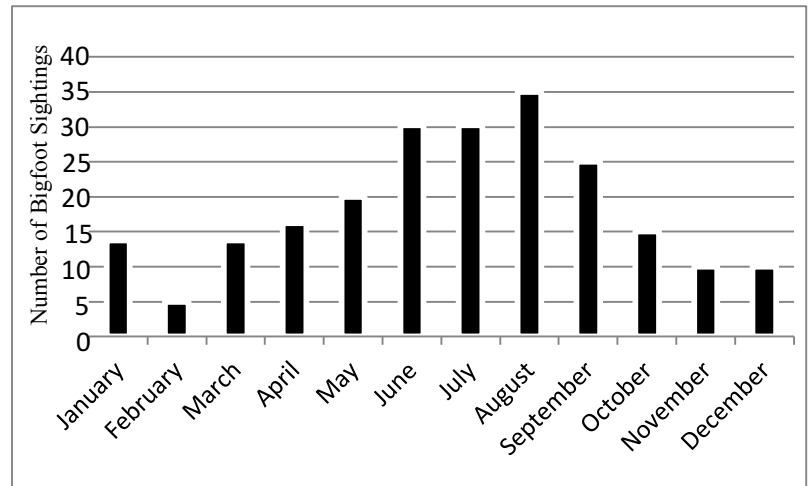
- A. 6 hours < 300 minutes < 30,000 seconds B. 2 hours < 160 minutes < 10,000 seconds
 C. 65 seconds > 1 minute > 1 hour D. 100 seconds > 10 minutes > 1 hour

11. This bar graph was created by Cleatus to make a scientific record of the activities of the mighty Sasquatch, or "Bigfoot". Which one of the following statements is most accurate based on this graph?



- A. Cleatus has a big backyard
 B. Bigfoot was seen least often in the months of November and December
 C. Bigfoot was seen about 16 times in April
 D. Bigfoot was seen 40 times in August

Bigfoot Sightings in Cleatus' Backyard



12. In the equation below, what is the numerical value of Q if A = 7?

$$\frac{(8-Q)}{2} = (A + B) \times 5$$

- A. 0 B. -62 C. 8 D. it cannot be determined

13. At the annual Panda Ant convention, delegations from around the Southwest bragged about how many stings it took them to subdue a cow. The following number of stings were reported: [15, 7, 13, 8, 6, 13, and 1]. Using this data, what is the mean number of stings the Panda Ants needed to subdue a cow?

- A. 14 B. 13 C. 9 D. 8

14. The evil Baron Von Duckie has built a device that will freeze the pond solid unless you can disarm it by entering the secret code. Luckily, the code follows the pattern of displayed numbers: [1, 7, 25, 79, ___]
 What code number do you enter to save the happy pond creatures from almost certain doom?

- A. 98 B. 134 C. 143 D. 241

15. On Porcine Airways flight #314, the pilot informs the passengers that they are 180 miles away from Chopville and that they will get there in 25 minutes. At that rate, how many miles away is Swinetown if it would take 1 hour to get there?

- A. 432 B. 420 C. 408 D. 452



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2015 Shoreline Math Olympiad

Fifth Grade – Team Test #1

-
1. The side length of a square picture of Sheldon Plankton lying on the sea floor measures 3 miles in length. The side length of a second square picture is twice that of the first square picture. The side length of a third square picture is twice that of the second square picture. Assuming the pictures do not overlap, what is the combined area of square miles covered by the three pictures?

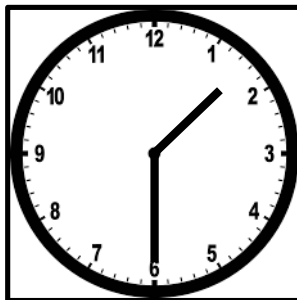
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2. To celebrate Pi Day ($3/14$), Mama Utsamatta Fourú is offering a special on her pizza pies. The first pizza is \$10, and each extra pizza will cost $4/5$ the price of the previous pizza. How much would you pay in total if you ordered 4 Pi Day special pizza pies?



-
3. At the witch trial, Yorick wanted to make it seem that the accused, Carrot-Nose, weighed the same as a duck. Yorick knew that Carrot-Nose weighed 9 stones, the duck weighed 3 bricks, and that 28 pebblitos = 4 bricks. If 3 bricks = $\frac{1}{2}$ of a stone, how many pebblitos must Yorick sneak onto the scale with the duck to match the weight of Carrot-Nose?



-
4. On an analog clock, what is the measure in degrees of the smaller of the two angles formed by the hour hand and the minute hand at 1:30 a.m.?

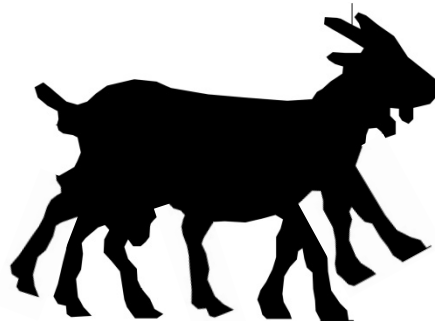


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5. A school of hungry piranha fish were swimming along in the Amazon River when they came upon a mighty feast. A three-toed sloth had fallen out of his boat along with his pet capybara. Thirty-one (31) piranha tasted at least some of the sloth, 18 tasted at least some of the capybara, 12 tasted both the sloth and the capybara, and one piranha was a vegetarian and ate some stale rice crackers instead of having sloth or capybara. How many fish were in the piranha school?



-
6. There are 5 separate bowls of coins, each filled with just one type of coin, which is either a penny, nickel, dime, quarter, or 50 cent piece. How many different values can be made by selecting any two coins?
-
7. At the advice of his doctor to reduce stress, the Norse God, Modi, has decided to give up his berserker rage and try his hand at ranching. On his new ranch he has the following creatures: Octogoats, each with 8 legs and 2 horns; Unicorns, each with 4 legs and 1 horn; the rock eating Xorn, each with 3 legs and 0 horns; and 2 Triceratops, each with 4 legs and 3 horns. If there are a total of 92 legs and 18 horns on the ranch, and twice as many Xorn as Unicorns, how many Octogoats are on the ranch?



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2015 Shoreline Math Olympiad

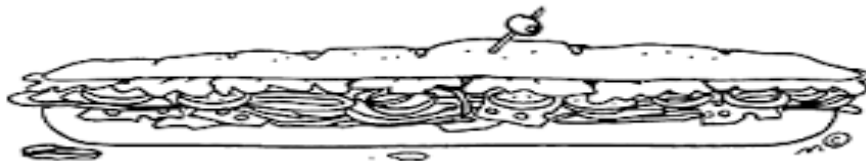
Fifth Grade – Team Test #2

-
1. At exactly 11:14 a.m. on a Wednesday, Professor Brain B. Bigge plans to test his time machine to travel back in time 1,001 minutes. What day and time will it be if the time machine works and the Professor is not turned inside-out?

-
2. Jor-El is designing his new 2-dimensional space capture field. It must be triangular, have a perimeter of 42 zarnocs, and have at least one side that is 15 zarnocs in length. If all side lengths are whole numbers of zarnocs, how many different space capture triangles are possible?



-
3. The world's longest submarine sandwich measured 2,400 feet. Two cuts of the sandwich were made and the three pieces were shared by Joey, Dagwood, and Homer. If Joey's piece was one-third ($\frac{1}{3}$) the size of Dagwood's piece, and Homer's piece was four times the size of Joey's piece, how many feet long was Dagwood's piece of the submarine sandwich?



-
4. The United States Mint spends on average 1.7 cents to make a penny, 8.1 cents to make a nickel, and 3.8 cents to make a dime. Jingly Pantaloons always has at least one penny, one nickel, and one dime in his pocket, but never any quarters due to a fear of George Washington. Today, Mr. Pantaloons has 36 cents. To the nearest tenth of a cent, what is the most the United States Mint could have spent to make his coins?



– PLEASE TURN OVER –

-
5. On a camping trip to the forest moon of Endor, Admiral Akbar discovers that his vacation spot is very rainy. His rectangular shaped campsite measures 35 feet by 20 feet, and all of it is getting wet from the rain. His good pal, Pateen, brought a rectangular tarp to help cover the site. It is supposed to be 15 feet in length and cover an area of 180 square feet. Upon opening the tarp they notice that its width is two feet less than it is supposed to be, but they use it anyway. How many square feet of the campsite remain uncovered?
-
6. What is the product of the greatest common factor and least common multiple of 16 and 28?
-
7. Rapunzel had a plan to throw a big party in the tower where she was imprisoned, but her hair was not strong enough to handle the extra weight of kegs of root beer and the D.J.'s equipment. To get around this problem, she had trained 8 rats who lived in her tower to braid her hair into a strong rope pattern. Working together, the 8 of them could braid her hair in 7 hours (a total of 56 rat work hours). Alas, a cat had started hunting in the tower and as the day of the party grew near, Rapunzel found herself with only 3 rats left. In hours and minutes, how long will it take the 3 surviving rats to braid her hair?



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Mental Math Questions

on the next page

(Proctor Only.

No peeky-peeky.)

2015 Shoreline Math Olympiad
Sixth Grade – Mental Math Test #1

Question #1: If there are 365 days in one year, how many days are in 3 years and 4 days?

Question #2: A pyramid with a triangular base is called a tetrahedron. What is the sum of a tetrahedron's vertices and faces?

Question #3: A rectangular prism shaped block of solid gold has a volume of 360 cubic inches. It has a length of ten inches. If the width and height of the block are equal, what is the block's height in inches?

2015 Shoreline Math Olympiad
Sixth Grade – Mental Math Test #2

Question #1: What is five-thirds of eighteen?

Question #2: Name a 3 dimensional solid figure that does not have a vertex, but does have more than one flat plane.

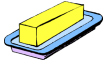
Question #3: A bus with no passengers on it arrives at its first stop and 9 passengers get on. At the second stop, one third of the passengers get off and 2 more get on. At the third stop, one half of the remaining passengers get off. Realizing that they had made a mistake, one half of those who had just gotten off, get back on along with 5 more new passengers. How many passengers are now on the bus?

2015 Shoreline Math Olympiad Sixth Grade – Individual Test #1

1. Solve for Z when $\frac{5.3 \times 3.5}{0.7} = Z$

- A. 265 B. 12.56 C. 2.65 D. 26.5

2. Working to help solve a mystery, Jake the dog hides in the refrigerator and disguises himself as a rectangular prism shaped stick of butter with a volume of 260 cubic centimeters. Later, Jake hides in a barn and expands his length, width, and height each 10 times the size of before, and pretends to be a bale of hay. What is Jake's new volume?



- A. it cannot be determined B. 260,000 cm³ C. 7,800 cm³ D. 2,600 cm³



3. Determine the mean for the set: [17, 0, 34, 68, 85, 102, 51]

- A. 51 B. 59.5 C. 47.6 D. 63

4. For the celebration of Pi Day (3/14/15 or 3.1415), Martha, Rachael and Alton all made pies for New Mexico's Pie Town. Each pie had a circular base and had equal heights. Martha's lemon chiffon (it's a good thing) pie had a diameter of 1 1/3 feet. Rachael's lady finger charlotte pie measured 8 inches from its top center to its top edge. Alton's pecan pie had a circumference of 54 inches. Who made the largest pie?

- A. All are the same size B. Martha C. Rachael D. Alton

5. With the battery of his electric hover-chair being only 3/8 charged, Archietron can travel a maximum of 63 miles. How many miles could he travel if the battery was fully charged?

- A. 315 B. 168 C. 504 D. 189



6. The expression $27 \left(\frac{1}{6} + \frac{8}{5} \right)$ is equal to which of the expressions below?

- A. $27 \times \frac{9}{11}$ B. $\frac{27}{6} + \frac{8}{5}$ C. $\frac{27}{6} + \left(27 \times \frac{8}{5} \right)$ D. $\left(27 + \frac{1}{6} \right) \times \left(27 + \frac{8}{5} \right)$

7. The number 78 has 8 positive whole number factors. What is the product of all 8 of these factors?

- A. 8 B. 78 C. 312 D. 37,015,056

8. Hubert has a method for how he plans to answer this year's Math Olympiad individual test questions. He has brought with him a fair six-sided die and will roll it for each question. Of the 4 possible answers, he will answer A if a 1 or 2 is rolled, B for a 3, C for a 4, D for a 5, and he will roll again if a 6 is rolled. If the test answers are randomized, and they are, what is the probability of Hubert answering the first question correctly if the correct answer is C?

- A. 1/4 B. 1/6 C. 1/5 D. 1/3



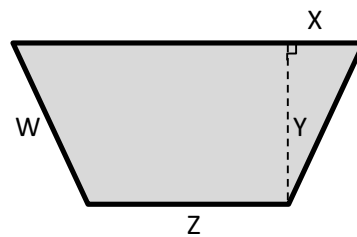
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9. "Will you just hold on a second!?" pleaded dad with his young daughter. "That's what you said at 8:14 a.m. exactly and now it has been 10:08 a.m. for 45 seconds." his daughter replied. How many seconds had the daughter been holding on?

- A. 1,585 B. 4,685 C. 6,885 D. 9,285

10. The figure at the right is an isosceles trapezoid. If $W = 13$ zettameters, $X = 5$ zettameters, $Y = 12$ zettameters, and $Z = 15$ zettameters, what is the area of this figure?

- A. 300 zm^2 B. 240 zm^2
 C. 195 zm^2 D. 210 zm^2



11. A square plot of land 1,200 feet long on each side provides a refuge for coconut crabs living in palm trees. There is a sign post with the warning "Beware of Crabs" at each corner of the plot. Eugene has purchased an additional 20 new sign posts and puts them along the perimeter of the square plot so that each is equally spaced along the perimeter from the next closest one. How far apart is each sign post from the next closest one?



- A. 200 feet B. 240 feet C. 300 feet D. 60 feet



12.

Ω	3	5.5	8.25	11
U	0	5	10.5	16

In the chart shown above, what expression can be used in place of the Ω symbol?

- A. $0.75 \times U + 2.5$ B. $\frac{U}{2} + 3$ C. $\Omega - 0.5/2\Omega$ D. $7 + \frac{U}{4}$

13. A table with a square top is standing all by itself in the middle of a large cafeteria. A total of 12 people can sit at that table to eat. Eighteen of these tables are then arranged so that their combined tops touch to form squares. What is the total number of people that can sit and eat at these combined tables if the fewest square shapes are made when arranging the 18 tables?

- A. 84 B. 216 C. 54 D. 72

14. A straight line in the coordinate plane passes through points (9,15) and (6,10). What other point will this line pass through?

- A. (2,5) B. (18,30) C. (0,3) D. (25,40)

15. A pirate band of 8 shared equally of their booty of Spanish golden doubloons. Four of these pirates gambled with their shares over a game of Liar's Dice. The one-armed, one-legged, one-eyed pirate named Lucky won the game and the other three pirates lost one third of their shares of the booty. What overall percentage of the booty does Lucky now possess?

- A. 45% B. 37.5% C. 25% D. 12.5%





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2015 Shoreline Math Olympiad

Sixth Grade – Individual Test #2

-
1. Of the quotients listed below, which has the greatest remainder?
- A. $10,000 \div 500$ B. $83 \div 3$ C. $417 \div 104$ D. $4,892 \div 4$
-
2. Which expression listed below does not equal zero?
- A. $18/0$ B. $0/18$ C. $8 \times (\frac{3}{4} - \frac{1}{4}) - 4$ D. $(1 - 12 + 3 - 4 + 15) \times 0$
-
3. Penelope Copperbottom is very precise in all matters. When dining out, she always leaves precisely 26% of the bill for the server as a tip, and always leaves just pennies. Today's English style scone, rashers of bacon, and tea for breakfast at the Crumpeteria cost her \$16.50. How many pennies did Penelope leave for her server?
- A. 491 B. 43 C. 429 D. 4.13
- 
-
4. Which of these pairs of solids have the most combined number of parallel faces?
- A. cylinder & square B. rectangular prism & hexagonal based pyramid
- C. sphere & triangular based pyramid D. triangular prism & cylinder
-
5. Over the years, Santo has fought with and protected the world from various bad men, bad women, and monsters. The monsters are the 12 mummies of Guanajuato. The bad women include 6 vampire women and 8 she-wolves. The bad men include 13 headhunters and 5 infernal men. What is the ratio of vampire women to bad men and monsters that Santo has fought?
- A. 7:15 B. 1:5 C. 3:19 D. 3:22
- 
-
6. What is $[8 + (-5) - (-13)] \times -2$?
- A. 20 B. 0 C. -20 D. -32
-
7. At the shared birthday party for Attila and Genghis, some brave peasant asked Attila how old he was. Attila replied that 9 years ago he was 4 times as old as Genghis. If Genghis is 43 years old and Attila was telling the truth, how old is Attila now?
- A. 51 B. 79 C. 136 D. 145
-
8. Professor Wrathington is feeling most vexed and wants to create a chamber where he can scream all he wants without disturbing the soufflé shop next door. To this end, he has built a hollow cube that measures 6 feet on a side, and named it the "Angry Chamber". What are the fewest number of sound proof square tiles, each covering 4 square feet, must he buy to completely cover the inside of the Angry Chamber?
- A. 9 B. 54 C. 36 D. 108



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9. Listed below are a few Grumpy Gus' "CAN'TS". Which statement is incorrect?

- A. You CAN'T have a fraction with a numerator greater than a denominator
- B. You CAN'T have an even prime number that is greater than 17
- C. You CAN'T find the volume of a 2-dimensional shape
- D. A right triangle CAN'T be an equilateral triangle

10. The mighty enchanter, Tim, has signed up to bring his famous mixed jello cube salad to the warlock potluck. The salad consists of identical sized cubes of jello of different flavors. There is twice as much night shade as toad stool flavored, twice as much eye of newt as night shade flavored, and twice as much grape as eye of newt flavored. Without peeking, what is the probability of picking a cube of eye of newt flavored jello first?



- A. 1/3
- B. 13/28
- C. 4/15
- D. 3/4

11. After bowling with Optimus Prime, Deion ate prime rib for dinner and then watched some prime-time television. The channel he watched was the median of the set of all prime numbers from 8 to 36. What television channel did Deion watch?

- A. 16.4
- B. 19 & 23
- C. 19
- D. 7

12. Solve for Q in the equation $4X + 3Y = 2Q$ when $Y = 2/5$ and $X = 1/8$

- A. 5/6
- B. $1 \frac{7}{10}$
- C. 3/4
- D. 17/20

13. Andy's exhibit at the outdoor sculpture park consists of 2 giant right cylindrical cans of soup that are standing side by side and touching. Their combined width is 36 feet. If one can's radius is 38% greater than the other can's radius, what is the approximate sum of their circumferences?

- A. 113 feet
- B. 407 feet
- C. 65 feet
- D. 226 feet



14. Knowing that $12E = 3T$ and that $E = 2$, Poindexter contends that he can determine the value of $(3T^2 \div 4E^2)$. What is the numerical value of $3T^2 \div 4E^2$?

- A. 3
- B. 12
- C. 3/64
- D. Poindexter was wrong, it cannot be determined

15. The wombat is a small marsupial native to Australia and is known to have cube shaped poops. One theory believes they do this for ease of storage. This idea is supported by the discovery of 9 cubic boxes, each box measuring 2 feet on an edge, that were filled with wombat poop with no empty space remaining. How many cubic yards do these 9 boxes total?



- A. 4
- B. 72
- C. $2 \frac{2}{3}$
- D. 18

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2015 Shoreline Math Olympiad

Sixth Grade – Team Test #1

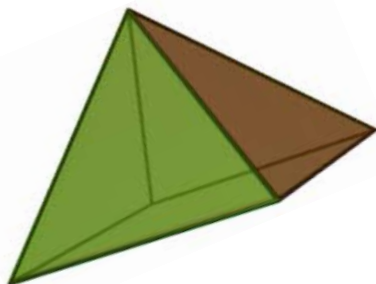
-
1. On November 19, 2009 at the Bacathlon, Erik “The Red” Denmark ate 225 strips of cooked bacon in one sitting. Each strip loses 20% of its weight when cooked, and there are 17 strips in each uncooked pound. To the nearest hundredth, how many pounds of bacon did Mr. Denmark eat?
-
2. On an analog clock, what is the measure in degrees of the larger of the two angles formed by the hour hand and the minute hand at 3:40 a.m.?
-
3. While outside the International Space, Boston Bruin hockey great Bobby Orr plans to take a slap-shot and try to score into a net set up on the surface of Mars. His timing and accuracy must be perfect as his slap-shot will launch the puck at 108 miles per hour. The puck will not slow down in the vacuum of space, and must travel 48.6 million miles to reach its target. To the nearest tenth of a year, and assuming there are 365.25 days in a year, how many years will it take before anyone will know if his shot went into the net?



-
4. What is the value of the units digit (or the ones place) when 7^{50} is fully expressed as a counting number?
-

– PLEASE TURN OVER –

-
5. Pulsating and glowing green, a right regular pyramid with a square base hovers mysteriously in the air. "It's too dang bright!", exclaims old man Chumpkins. He is not impressed and vows to completely cover the object with old newspapers. If the object has a base side length of 7 feet and a length of 12 feet from its top vertex to a midpoint on the edge of its square base, what is the minimum square footage of newspaper needed to completely cover all of the object's surfaces?



-
6. For the Wicked Doers spell casting final exam, you receive 3 points for each correct answer. For each incorrect answer, 5 points are deducted and one of your body parts is turned into a body part of a random creature. After answering all 20 questions on the exam, Foulette had a score of 28 points. How many of her body parts got changed?

-
7. Properly grooming Gordo the gorilla is a big job, but Gertrude is good at it and can groom him by herself in 3 hours. Gaga is even better at grooming him and can do the job by herself in 2 hours. How many minutes will it take to groom Gordo if Gertrude and Gaga work together?



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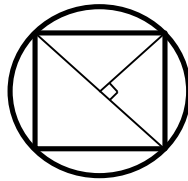
2015 Shoreline Math Olympiad

Sixth Grade – Team Test #2

-
1. There are no people around and a tree falls in the forest. Pixies do live in this forest and they have excellent hearing. There is a 50% chance that a pixie is nearby and hears this tree falling. Sadly, a recent survey shows that only 5 out of every 8 pixies care about the trees in the forest. What is the probability expressed as a decimal rounded to the nearest hundredth, with 1 being certain and 0 being impossible, that when the tree falls in the forest, does it make a sound heard by pixies AND does any pixie hearing it care?



-
2. A square has all four of its vertices on a circle that has been drawn around it. If the circumference of the circle is 628 centimeters, how many square centimeters is the area of the square? (note: use $\pi = 3.14$)



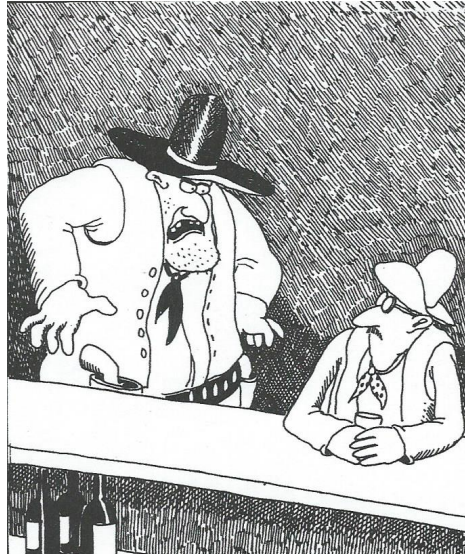
-
3. Expressing your answer as a fraction in simplest form, what number has a value that when it is represented on a number line would be exactly half way between $\frac{2}{3}$ and 1.25?

-
4. Hubert Cumberdale, hoping to impress his friend Mr. Fingers, is building a rectangular display frame to show off his collection of rusty spoons. Each spoon will hang on the wall and needs a rectangular space of 8 inches by 2 inches to be properly displayed. Hubert has enough wood to make a frame with an interior perimeter of 8 feet. What is the greatest number of rusty spoons he will be able to display inside the frame?



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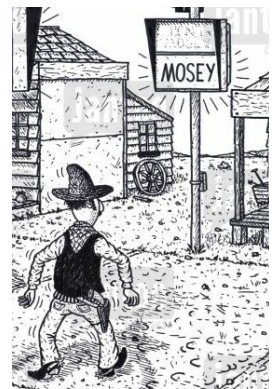
5.



"I asked you a question buddy How many different two digit whole numbers are there whose squares are less than 5,000 AND whose squares are odd?"

6. The 100 foot tall Mega Kappa has demanded that his cucumber soda be served with ice. You have constructed a water-tight box that is 3 feet wide, 5 feet deep, and 7 feet tall. The box has been filled one fourth of the way with water. You then add an additional 58 cubic feet of water and then a fork-lift carries the box into a warehouse freezer. When water freezes, its volume expands 8%. Calculated to the nearest hundredth of a cubic foot, what is the volume of air in the box, if any, after the giant ice cube is fully frozen?

7. At the Cowboy Olympics, the 120 meter mosey was won by Hank finishing in 60 seconds. When Hank crossed the finish line, Bart was still 20 meters behind him, and 20 meters behind Bart was Tex. If Bart and Tex continued the race at their same rates of speed, how many meters behind was Tex from Bart when Bart crossed the finish line?



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**2015 Shoreline Math Olympiad
Seventh/Eighth Grade – Individual Test #1**

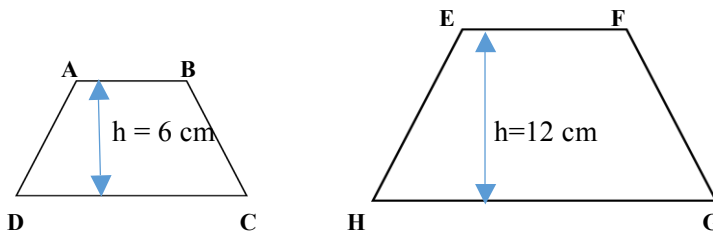
1. What is the slope of the line that passes through the points (2,0) and (1,5)
a) 2015 b) 1/5 c) -1/5 d) -5
2. Solve for a : $a + 6 - 2 \times 6 + 4 - 8 + 3 \times 2 = 0$
a) 4 b) 22 c) 50 d) 6
3. What is the sum of the next two terms in the sequence: 2, 3, 6, 7, 14, 15, 30...?
a) 63 b) 121 c) 93 d) 2015



4. A survey of 26 middle-school students revealed that 14 students like zombie movies, 10 students like vampire movies, and 5 students like giant mutant lizard movies. Four students like zombie and vampire movies, 3 students like giant mutant lizard and zombie movies, and one student likes vampire and giant mutant lizard movies. If no students like all three types of movies, how many students like *none* of these type of movies?
a) 7 b) 10 c) 13 d) 5
5. Solve for w : $\frac{2}{3}w - \frac{1}{2} = w + \frac{7}{6}$
a) 1/3 b) 5 c) -3 d) -5
6. Bilbo found a great deal on rings. He bought a ring for 70% the original price. If he saved \$45, what was the original price?
a) \$150 b) \$ 125 c) \$105 d) \$115

7. Trapezoid ABCD is similar to trapezoid EFGH. The height of trapezoid ABCD is 6 cm. The length of line DC is twice the height of trapezoid ABCD, and four times the length of AB. What is the area of trapezoid EFGH, in cm^2 ?

- a) 144 b) 180
c) 45 d) 90



(Drawing not to scale)

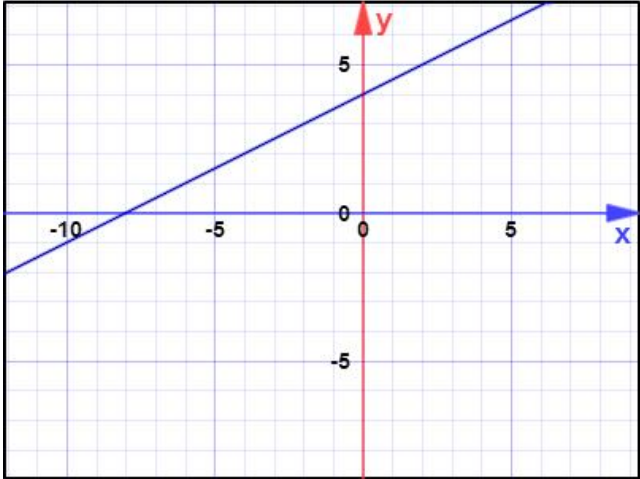
But wait, there's more! (Turn me over for more math fun) →

**2015 Shoreline Math Olympiad
Seventh/Eighth Grade – Individual Test #1**

8. Find the sum of all the prime numbers between 20 and 40.
a) 91 b) 152 c) 147 d) 120
9. Wallace and Grommet work together to build 3-legged stools and 4-legged tables. They use the same legs for both stools and tables. Last week, they needed 67 legs, and they built 6 more stools than tables. How many stools did Wallace and Grommet make last week?
a) 10 b) 7 c) 13 d) 6
10. The comic book store is having a swap day. If Sheldon can get 2 X-Men comics for every 7 Spiderman, 5 Archies for every 4 X-Men, and 14 Batmans for every 15 Archies, how many Batmans can he get for 6 Spiderman comics?
a) 2 b) 6 c) 3 d) 5
11. Which of the following numbers is the largest?
a) 0.09 b) 9.35×10^{-2} c) $1/11$ d) 0.092

12. The equation of the line in the graph shown to the right is:

- a) $x = 2y - 4$ b) $y = \frac{1}{2}x + 4$
c) $y = 2x - 4$ d) $\frac{1}{2}y = 2x + 2$



13. What year is it 10 years before the next year that is a perfect square?

- a) 2025 b) 2020
c) 2106 d) 2015

14. Fred has drawn a triangle and labeled the angles P, Q, and R. If angle P is 75 degrees, and angle Q is 4 times angle R, what is the measure of angle R, in degrees.

- a) 70 b) 21 c) 35 d) 84

15. If the length of a rectangle is increased by 10%, and the width is decreased by 10%, what is the effect on the area of the rectangle?

- a) decreases by 1% b) no change c) increases by 1% d) increases by 21%

2015 Shoreline Math Olympiad
Seventh/Eighth Grade: Individual Test #2

1. What is the prime factorization of 2015?
a) $5 \times 13 \times 31$ b) 5×403 c) $3 \times 3 \times 3 \times 3 \times 5 \times 5$ d) 5×401

2. Evaluate $y^3 + 4x^2 - 5y - 2x$ for $x = -7$ and $y = 3$
a) 224 b) 222 c) 194 d) -170

3. Shawn and Gus are delivering pineapples. Working alone, Shawn can deliver the pineapples on the route in 2 hours. It takes Gus 3 hours to complete the same route when he works alone. How long would it take them to deliver pineapples if they worked together?
a) 50 mins b) 1 hr, 5 mins c) 1 hr, 12 mins d) 1 hr, 10 mins

4. It is the grand opening of the new grocery store in town. Every 4th customer will get a coupon for a free cheesecake and every 9th customer will get a coupon for a free pie. If 400 customers come in on opening day, how many will get a free cheesecake *and* a free pie?
a) 36 b) 11 c) 45 d) 13

5. Which values of x will make the following equation true? $|3x + 9| = 15$
a) 8, -6 b) 3, -9 c) -2, 3 d) 2, -8

6. What quadrants of the coordinate system would the line $3y - 6x = 18$ pass through?
a) I, II, IV b) II, III c) I, II, III d) I, III, IV

7. Nick Fury, Iron Man, the Hulk, Black Widow, Captain America, Thor and Hawkeye are sitting around a circular table discussing how to defeat Loki. How many different ways can they arrange themselves if Black Widow and Hawkeye have to sit next to each other?
a) 120 b) 240 c) 720 d) 5040

8. What is the greatest common factor of 144 and 324?
a) 72 b) 24
c) 18 d) 36



2015 Shoreline Math Olympiad
Seventh/Eighth Grade: Individual Test #2

9. Bert snail and Ernie snail are racing around a circular track. Bert can slither at a rate of 2 laps every 26 minutes, and Ernie moves along at a rate of 5 laps every 35 minutes. If they start at the same place at the same time, how long will it be before they meet up again at the same place they started?



a) 1 hour, 11 mins b) 2 hrs, 11 mins c) 2 hrs, 23 mins d) 1 hour, 31 mins

10. How many different ways are there to arrange the letters in the word CONTEST?

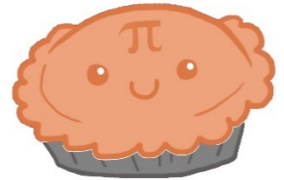
a) 2520 b) 4320 c) 5040 d) 720

11. Chester Chipmunk has hidden 6 peanuts and 2 chestnuts in his winter hidey-hole. If he reaches into his hole and grabs one nut without looking, and then eats that nut and grabs another nut without looking, what is the probability that both nuts were peanuts?

a) 9/16 b) 15/28 c) 1/4 d) 7/28

12. Pi day is on March 14, 2015 (3-14-15) is very special because $\pi = 3.1415\dots$ Pi day is on a Saturday this year. What day of the week will it be 314 days from this year's pi day?

a) Sunday b) Tuesday c) Thurs d) Friday



13. A hole is being dug for a cylindrical tank. The top of the tank will be flush with the ground. If the tank is 16 ft in diameter and 10 feet high, and the trucks can carry 50π ft³ of dirt at a time, how many truckloads will it take to clear all the dirt from the hole?

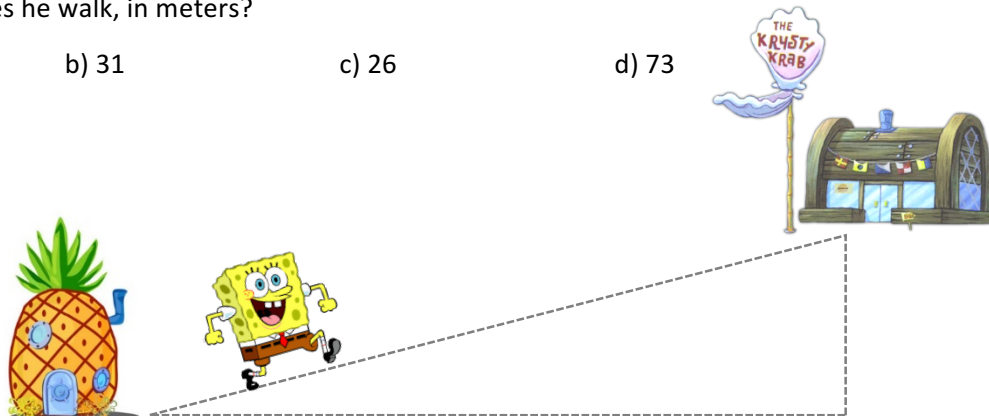
a)12 b)10 c)11 d)13

14. During Beast Quake 2.0, Marshawn Lynch of the Seattle Seahawks ran 79 yards in 14 seconds. What was his average speed (rounded to the nearest hundredth), in feet per second?

a) 5.64 b) 16.93 c) 17.64 d) 50.79

15. Spongebob Squarepants is walking to work. The Krusty Krab is 24 meters east and 7 meters north of Spongebob's house. If Spongebob walks in a straight line from his house to the Krusty Krab, how far does he walk, in meters?

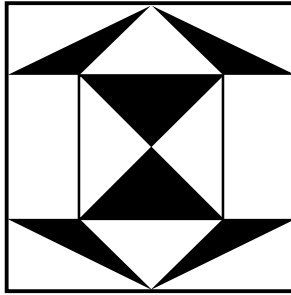
a) 25 b) 31 c) 26 d) 73



WhooHoo! Another Test DONE! (this copy is all yours)

**2015 Shoreline Math Olympiad
Seventh/Eighth Grade: Team Test #1**

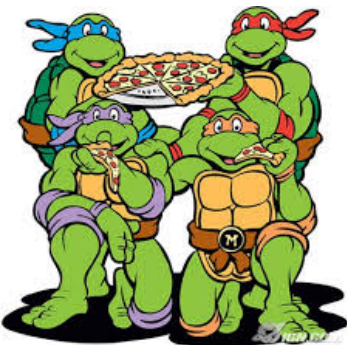
1. Darryl loves to play darts. He practices on an unusual dartboard, as shown below. The dartboard is 1 ft by 1ft square, with a 6-inch square at its center. What is the probability that Darryl will hit a shaded triangle when he throws a dart at the dartboard?



2. A chemist has one solution of hydrochloric acid and water that is 25% acid and a second that is 75% acid. He mixes both solutions together to get 250 liters of a solution that is 40% acid. How many liters of 25% solution did he need?



3. A rectangular garden has a length of $x+1$ and a width of $x+2$, and an area of 42. Find the perimeter of the garden.
4. Leonardo, Michelangelo, Raphael and Donatello were sharing a circular pizza. Each cut a piece that was a sector of the circle. Leonardo took $\frac{1}{3}$ of the pizza. Michelangelo took $\frac{1}{4}$ of the whole pizza. Raphael took $\frac{1}{5}$ of the pizza. Donatello took $\frac{1}{6}$ of the whole pizza. When they were done, the pizza had one sector remaining. Find the measure in degrees of the angle formed by the remaining sector.



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5. Dilbert has just gotten a new job, and he has a very unusual boss. His boss gave him two choices for how he can take his salary. First choice: Starting salary is \$30,000, with a 5% raise at the end of every year. Second choice: Starting salary is \$23,000, with a \$5,000 raise at the end of every year. What is the positive difference between the salaries of the two choices during the 6th year? Round your answer to the nearest cent.
6. Lisa takes a drive in her new car. She wants to drive down to the botanical gardens and drive the scenic loop there because the flowers are in bloom. To get to the scenic loop, she drives 30 miles on the highway, at 60 miles per hour. She then drives the 12 mile scenic loop at 10 miles per hour, and then drives back home on the highway again. On the way home, there is traffic on the highway and she is only able to drive 40 miles per hour. What is her average speed, in miles per hour, for the entire trip? Round to the nearest 10th.



7. What is the area of the triangle created by lines which pass through the points $(-9,23)$, $(3,14)$ and $(15,30)$?



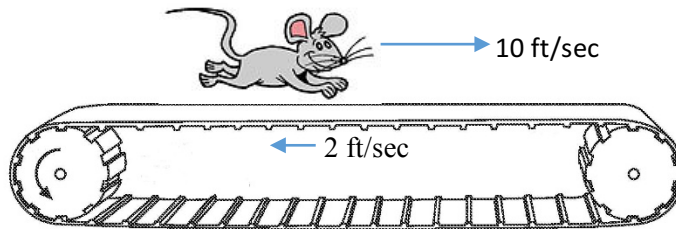
2015 Shoreline Math Olympiad
Seventh/Eighth Grade: Team Test #2

1. How many times in a 12 hour period does the sum of the digits on a digital clock equal 6?

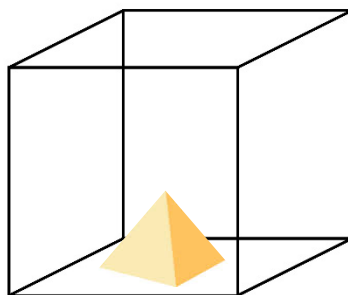
2. I have 3 conical-shaped traffic cones, the smallest of which has a radius of 3 inches and a height of 6 inches. The middle cone has twice the height and twice the radius of the first cone, and the largest cone has three times the height and radius of the first cone.. What is the total combined volume of the three cones? Ignore the square base. Leave your answer in terms of pi.



3. Melvin the mouse is running on a very long conveyor belt. He runs at a speed of 10 ft/sec. The belt moves backwards at a rate of 2 ft/sec. Mighty Mouse runs for 10 seconds and then rests for 5 seconds. How many seconds will it take for him to run the full 700 ft conveyor belt? Round your answer to the nearest second.



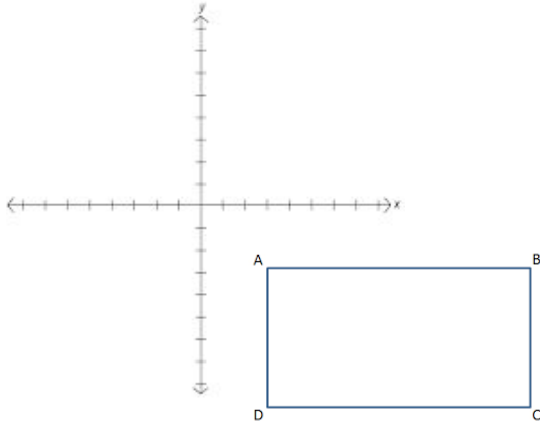
4. Pharaoh Phil is filling a cube-shaped pool that has a side length of 3 meters. Sitting on the bottom of the pool is a decorative square-based pyramid. The pyramid has a height of 1.5 meters and a side base length of 2 meters. If Phil fills the pool with a hose that delivers water at a rate of 2 cubic meters per minute, how many minutes will it take him to fill the pool?



2015 Shoreline Math Olympiad
Seventh/Eighth Grade: Team Test #2

5. Point A on rectangle ABCD is located at (3,-4). Rectangle ABCD has a length of 6 units and a height of 3 units. Rectangle ABCD is translated up 8 units, and then reflected over the y-axis. What are the new coordinates of point C?

Note: *illustration not to scale*



6. The Happy Campers are going to camp at Happy Island. On the first day, 10 campers go over to the island, but 2 of the 10 come back. On the second day, 12 go over and 3 come back. If this pattern continues, how many would be on the island at the end of a week?
7. Mabel has 5 bags of marbles. The first four bags contain 6, 18, 20, and 4 marbles each. Mabel knows the mean and median of the number of marbles in all five bags is the same. What is the smallest possible number of marbles in the fifth bag?