

TEAM MATH QUEST SCORE SHEET
Middle/Junior High School

2009 Junior Preliminary
Category I: General Math or Pre-Algebra

Team Information	School: _____	Center: _____
Student Names:	Grade Level:	Current Math Class:
1 _____	_____	_____
2 _____	_____	_____
3 _____	_____	_____

Note: All answers must be in reduced form and include appropriate units of measurement.

#	Team Answer
1	
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#	Team Answer
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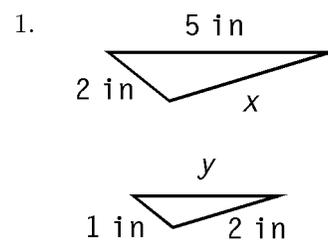
For Judge's Use Only

_____ x 4 = _____
correct answers

_____ x 1 = _____
incorrect answers
(do not include non-responses)

SCORE

Find the lengths of the missing sides in the pairs of similar figures.



2. Simplify the expression: $\frac{6}{5 + \frac{4}{3 + \frac{1}{2}}}$

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3. For all real numbers a and b , where $a \neq 0$, $a \star b = \frac{b+1}{a}$. Then find the value of $(2 \star 3) \star 1$.

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4. On a recent trip, Craig's car used 6 gallons of gasoline to travel 162 miles. At this rate, how far could his car travel on 15 gallons of gasoline?

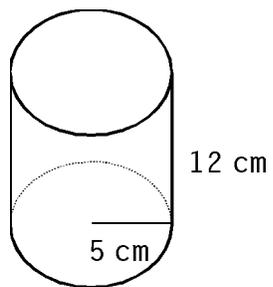
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5. If the length of a rectangular plot is twice its width and the perimeter is 24 m, what is the length in meters?

Find the surface area. (Use $\pi = 3.14$.)

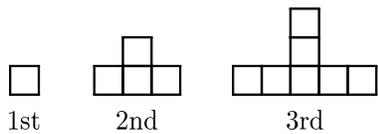
6.



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7. How many squares are needed to build the 10th shape in the pattern?



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8. Mr. Jackson is saving to buy a new CD player that costs \$495. He plans to save \$45 a week. How many weeks will it take him to save enough money to buy the CD player?

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9. What is the median of the following data set?

12, 5, 12, 8, 11, 3

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10. A coin and a die are tossed. What is the probability of getting a head on the coin and a 4 on the die?

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11. In physical education class, the teachers lined up the students and had them count off in groups of 5. If you were the 103rd student in the line, what number would you expect to be given?

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12. If a single bacteria was put in a dish to grow, and it reproduced at the rate shown, how many bacteria will there be in the dish after six hours.

	1 hour	2 hours	3 hours	4 hours	5 hours	6 hours
Number of germs	2	3	5	8	13	x

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13. On a certain holiday, a store gives a 10% discount to all customers. If Charlie bought a \$42.00 lawn chair and a \$98.00 hammock, how much did he pay for the two items?

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14. Simplify: $8 \div -\frac{3}{5}$

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15. Find the product of $(\frac{1}{4})^{-3}(8)^{-2}$.

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Write as an algebraic expression.

16. the length of a rectangle with perimeter p inches and width of 5 inches

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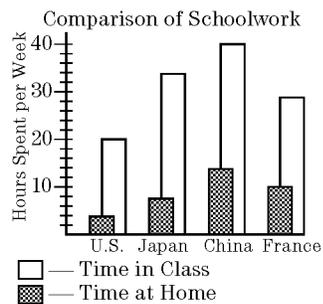
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17. Simplify: $\sqrt{25c^4d^{16}}$

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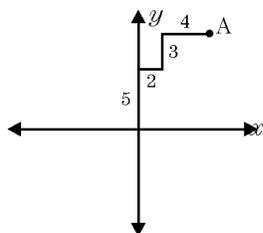
18. In Japan, find the ratio of time spent on schoolwork at home to total time spent on in-school activities.



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19. Lines of various lengths are drawn on the coordinate plane, as shown in the figure below. What is the slope of a line drawn from the origin to Point A?



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20. The Concorde jet can fly from New York to London, a distance of 3,458 miles, in 2 hours and 54 minutes. What is the Concorde's average speed in miles per hour?

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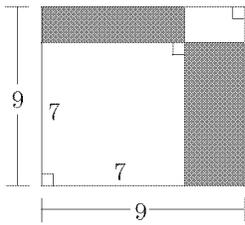
21. What is the sum of the next two multiples of 3 after 47?

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22. How many miles per hour is 1298 feet per second?

23. Find the area of the shaded region.

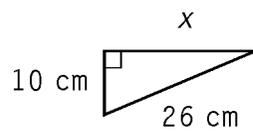


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Use the Pythagorean theorem to find the length of the missing side.

24.

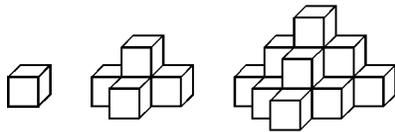


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25. In a selected group of singers a music teacher has 5 sopranos, 4 altos, 4 basses, and 3 tenors. How many quartets (1 of each type) may be chosen from this group?

26. How many cubes will be in the next figure if the pattern continues?



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27. $\sqrt{92}$ is between which pair of consecutive integers?

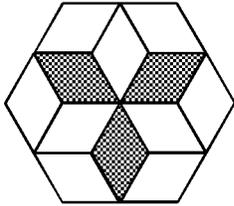
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28. In a certain rectangle, the ratio of length to width is $5 : 3$. Find the length if the width is 12 meters.

What fraction of the diagram is *not* shaded?

29.



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30. Simplify: $\frac{2^4 3^{-2}}{5^2} \cdot \frac{3^4 5^{-1}}{2^2}$