Math Awareness Day

Math Practice problems

Please contact Dr. Ricardo Teixeira (teixeirar@uhv.edu) to discuss questions and/or schedule a problem session.

Spring 2013

1. Kathryn must make a 92 average on her tests to make an A in her math class, and get a new vehicle. If she has 88, 95, 83, and 97 on her previous tests, what would the smallest grade that she need to make on her last test to get the A on her class?

2. How many different ways can you rearrange the letters in *tests*?

3. When rolling a pair of dice what is the probability of rolling a total of 7?

4. Mad at her boyfriend, Safira tore a love letter into *n* pieces. After that, she took one of the pieces and tore again into *n* smaller pieces. Since she was still mad, she got one of the last pieces and tore it into *n* even smaller pieces. From the numbers below, which could represent the final quantity of total pieces?
15, 26, 28, 33 or 36? (Hint: only one value is possible)

5. Kaci has 8 pair of jeans, 4 skirts, 12 blouses, and 5 pairs of shoes. How many different outfit combinations does she have? (she can use either a pair of jeans or a skirt, never both at the same time)

6. Ramoan purchased $30,000 worth of municipal bonds. If he can purchase them in denominations of $500 or $1,000, what is the maximum number of bonds he purchased?

7. How many non-congruent and non-isosceles triangles with perimeter 7 will have all its sides with integer length?

8. Twenty-five index cards numbered 1-25 are placed in a box and drawn at random as students enter the classroom, once a card is drawn, it is discarded. What is the probability that the second student will draw a multiple of 3?

9. If 5 coins are tossed simultaneously, what is the probability of getting exactly 3 heads?

10. A Spanish teacher has noticed that about 35% of those taking the test make an A, historically. If 135 students take the test, how many can be expected to make an A?

11. Meghan, Owen, Travis, Natalie, and Ana won a set of 3 tickets to a concert. How many different combinations are there for three of the friends to use the tickets?

12. Suppose we have the following rectangle by putting together 7 rectangles with perimeters of 42 feet. Find the area of the big rectangle.
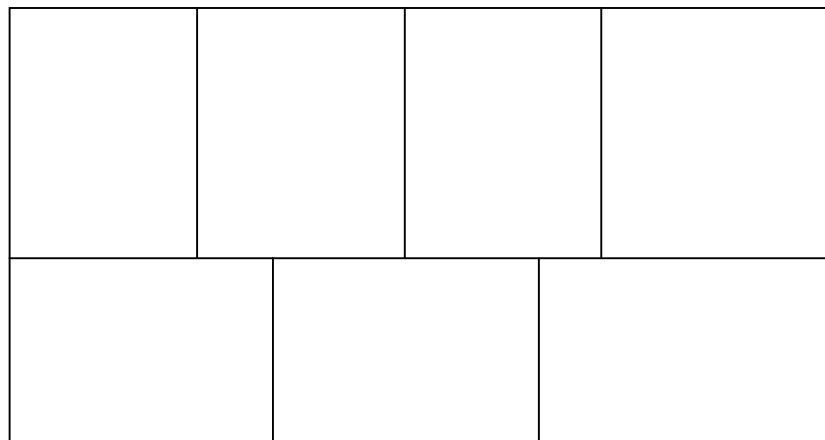
13. Count the number of different ways to reach from A to B, if you can travel on the sides of the rectangle, and only from left to right or upwards.

B

A
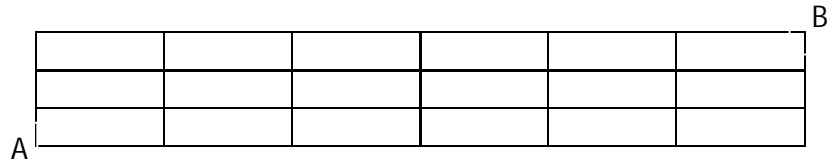
14. Suppose there are two lines $y = 5x$ and $y = -\frac{1}{5}x$, and another line $y = cx$ with $c > 0$ bisecting the angle between these two lines. Find the value of c.

15. Suppose we have a regular pentagon with length of each side equal to 1. Find the length of $\overline{BP}$.

A

B   P   E

C   D
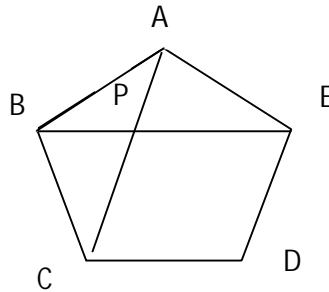
16. If you count from 1 to 100, how many 7's will you pass on the way?

17. Look at the drawing. The numbers alongside each column and row are the total of the values of the symbols within each column and row. What should replace the question mark?

				28
				30
				20
				16
?	19	20	30	

18. Fill in the missing number: 0,1,1,2,3,5,8,13,__,34,55

19. How many four sided figures are in this diagram?

- ○ 10
- ○ 16
- ○ 25
- ○ 28

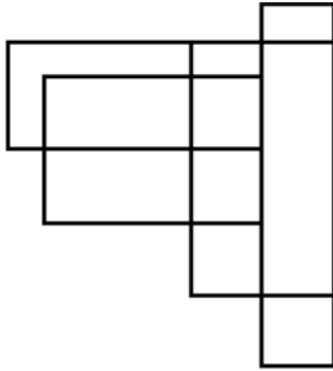20. Following the pattern shown in the number sequence below, what is the missing number?

1 8 27 __ 125 216

21. Two men, starting at the same point, walk in opposite directions for 4 meters, turn left and walk another 3 meters. What is the distance between them?

22. Four years ago, Jane was twice as old as Sam. Four years on from now, Sam will be 3/4 of Jane's age. How old is Jane now?

23. Which of the figures below the line of drawings best completes the series?

○

○

○

○
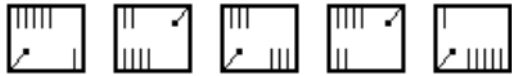
24. If two typists can type two pages in two minutes, how many typists will it take to type 18 pages in six minutes?

25. Sally likes 225 but not 224; she likes 900 but not 800; she likes 144 but not 145. Which does she like 1600 or 1700?
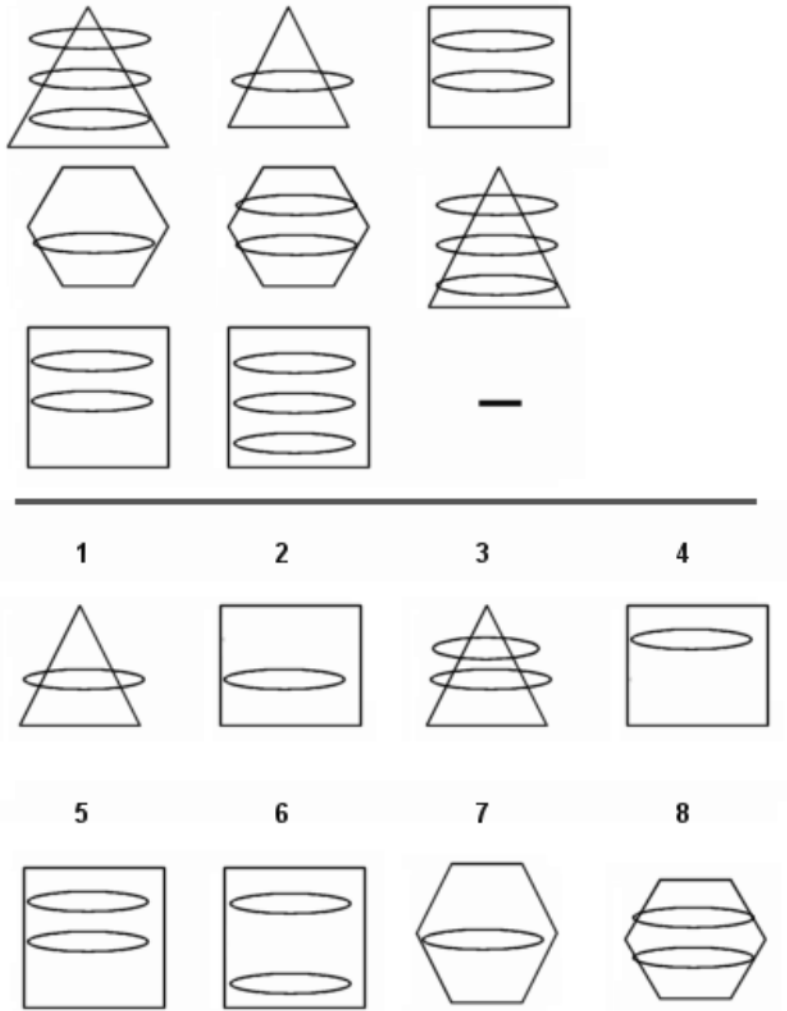
26. If it were two hours later, it would be half as long until midnight as it would be if it were an hour later. What time is it now?

○   18:30

○   20:00

○   21:00

○   22:00

○   23:30

27. What is the number that is one half of one quarter of one tenth of 400?

28. Which vowel comes midway between J and T?

29. Complete the sequence

30. What is the value of the expression $20132013^2 + 20132005^2 - 16 \times 20132009$?

a) 2×20132005^2

b) 2×20132013^2

c) 2×20132009^2

d) 2×20132005

e) 2×20132009

31. Let a and b be numbers different from zero such that the equation $x^2 + ax + b = 0$ has a and b as roots. Find the value of a.

32. The number 7, when raised to the fourth power, results in a number that ends in 01: $7^4 = 2401$.

33. Esther has a bucket with 9 liters of a mixture that contains 50% alcohol and 50% water. She wants to add water to the mixture so that only 30% of the solution is alcohol. How many liters of water will she add?

34. Andy went shopping. In the first store, he spent half of the money plus 10 dollars. In the second store, he spent half of he had left plus 5. In the third and final store, he spent one third of what he had left plus 3. He finished his day with $11. With how much did he start the day?

For the event info, please go to http://mathcs.aiatuhv.com/Default.aspx