# Fall 2016 McNabb GDCTM Contest
Pre-Algebra

NO Calculators Allowed

1. How many two-digit integers are divisible by five?

2. Simplify: $7 - 5 \cdot 13$

3. Jerry has five times as many comic books as Tom. If Jerry has forty-five comic books, how many does Tom have?

4. A recipe for 5 servings calls for $2\frac{1}{12}$ cups of flour. To adjust this recipe to serve a dozen, how many cups of flour should now be used?

5. Jane was born in the year 2003. When she was born, her Mom was 26 years old. In what year will Jane's Mom be three times older than her?

6. Find the number of squares whose vertices all are points of a uniform 3 by 4 rectangular array, as shown below:
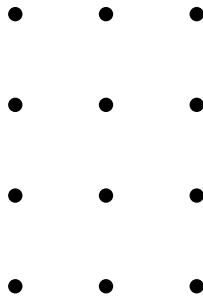
7. Express the number 2016_8 (means 2016 base 8) in base 9.

8. The volume of a rectangular box is 360. If the height of the box is increased by 3%, the width of the box decreased by 5% and the depth of the box increased by 2%, then find the volume of the new box.

9. Hezy and Zeke have between them $30. If Zeke were to give Hezy four dollars, they would then have the same amount of money. How many dollars did Zeke have to begin with?

10. How many zero's occur when the number $2^{23} * 3 * 5^{24} * 7$ is written out in standard form?

11. If the sum of three positive integers is 32, what is the greatest possible value of their product?

12. Simplify

$$\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{3+\cfrac{1}{4}}}}$$

13. If three standard dice are rolled, what is the probability that all three show a different number?

14. Which of these numbers is the least?

$$\{2 - \sqrt{3}, \ 1/3, \ (.57)^2\}$$

15. If the $\mathrm{lcm}(80, a) = 320$, how many different positive integer values can a take on?