Name: _____ **Score:** _____/_____/50 **Grade:** _____

The accuracy round is 40 minutes long. Questions are weighted by difficulty.

1. _____

2. _____

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10. _____

11. _____

Special Thanks to:

Dropbox

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AoPS Art of Problem Solving

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1. James has 8 Instagram accounts, 3 Facebook accounts, 4 QQ accounts, and 3 YouTube accounts. If each Instagram account has 19 pictures, each Facebook account has 5 pictures and 9 videos, each QQ account has a total of 17 pictures, and each YouTube account has 13 videos and no pictures, how many pictures in total does James have in all these accounts?

2. If Poonam can trade 7 *shanks* for 4 *shinks*, and she can trade 10 *shinks* for 17 *shenks*. How many *shenks* can Poonam get if she traded all of her 105 *shanks*?

3. Jerry has a bag with 3 red marbles, 5 blue marbles and 2 white marbles. If Jerry randomly picks two marbles from the bag without replacement, the probability that he gets two different colors can be expressed as a fraction $\frac{m}{n}$ in lowest terms. What is $m+n$?

4. Bob's favorite number is between 1200 and 4000, divisible by 5, has the same units and hundreds digits, and the same tens and thousands digits. If his favorite number is even and not divisible by 3, what is his favorite number?

5. Consider a unit cube $ABCDEFGH$. Let O be the center of the face $EFGH$. The length of $\overline{BO}$ can be expressed in the form $\frac{\sqrt{a}}{b}$, where a and b are simplified to lowest terms. What is $a+b$?

6. Mr. Eddie Wang is a crazy rich boss who owns a giant company in Singapore. Even though Mr. Wang appears friendly, he finds great joy in firing his employees. His immediately fires them when they say "hello" and/or "goodbye" to him. It is well known that 1/2 of the total people say "hello" and/or "goodbye" to him everyday. If Mr. Wang had 2050 employees at the end of yesterday, and he hires 2 new employees at the beginning of each day, in how many days will Mr. Wang first only have 6 employees left?

7. In $\triangle ABC$, $AB = 5, AC = 6$. Let D, E, F be the midpoints of $\overline{BC}, \overline{AC}, \overline{AB}$, respectively. Let X be the foot of the altitude from D to $\overline{EF}$. Let $\overline{AX}$ intersect $\overline{BC}$ at Y. Given $DY = 1$, the length of BC is $\frac{p}{q}$ for relatively prime positive integers p, q. Find $p+q$.

8. Given $\frac{1}{2006} = \frac{1}{a} + \frac{1}{b}$ where a is a 4 digit positive integer and b is a 6 digit positive integer, find the smallest possible value of b.

9. Pocky the postman has unlimited stamps worth $5, 6$ and 7 cents. However, his post office has two very *odd* requirements: On each envelope, an odd number of 7 cent stamps must be used, and the total number of stamps used must also be odd. What is the largest amount of postage money Pocky cannot make with his stamps, in cents?

10. Let $ABCDEF$ be a regular hexagon with side length 2. Let G be the midpoint of side DE. Now let O be the intersection of BG and CF. The radius of the circle inscribed in triangle BOC can be expressed in the form $\frac{a\sqrt{b}-\sqrt{c}}{d}$, where a, b, c, d are simplified to lowest terms. What is $a+b+c+d$?

11. **Estimation (Tiebreaker):**

    What is the total number of characters in all of the participants' email addresses in the Accuracy Round?