

2024 MMU Spring Competition (K-2) Theme Round

You will have 20 minutes to complete as much of this test as you can. There are 10 free response questions all based around a common theme, and questions are arranged roughly from easiest to most difficult. Units are not needed. Write answers on the given line below each question. Calculators are not allowed. Do not begin the test until told to do so. Good Luck!

Full Name: _____

Grade: _____

Age: _____

1. minutes Dinnerbone likes making Porkchops. If it takes 5 minutes for his furnace to cook a Porkchop and he has 5 friends coming over, how long will it take David to make a porkchop for everyone, including himself?

2. An enderman does 5 damage, while a zombie does only 3. If Phil has 25 health points and he must respawn if he ever gets to 0 or lower. If David will take e hits from an enderman and z hits from a zombie, compute $z - e$.

3. people If there are exactly 7 skins in Tfarcenim, how many people must be in the same room to have above a 50% chance of 2 people having the same skin?

4. pixels³ A skeleton has a head with a width of 8 pixels, a height of 8 pixels, and a depth of 9 pixels. What is the surface area of this skeleton's head?

5. hours If cobblestone generator A produces 45,000 pieces of cobblestone an hour and takes 11 hours to make, and cobblestone generator B produces 50,000 pieces of cobblestone an hour, but takes 24 hours to make, after how many hours have they produced the same amount of cobblestone?

6. What is the chance of a *good* villager if a *good* villager has all 3 of thier trades defined as *good* trades? A villager has a $\frac{1}{3}$ of getting a *good* first trade, a $\frac{1}{4}$ for the second, and a $\frac{1}{5}$ of a *good* final trade.

7. _____ sets How many different sets of defensive equipment can David use if there are 5 materials for armor (leather, iron, gold, diamond, and netherite), but David can only make 1 piece of armor out of netherite. David has 4 slots for armor (helmet, chest-plate, leggings, boots) and David can either choose to use or not use a shield?
8. _____ chickens Notch owns some sheep and chickens at his lovely farm. Given that there are a total of 120 legs on the farm and 41 heads, find the number of chickens Notch has on his farm.
9. _____ Alex has gone fishing. Suppose that he whenever he fishes, he can only catch either cod, salmon, or tropical fish. The chance of fishing cod is $\frac{3}{4}$ and the chance of fishing salmon is $\frac{1}{8}$. If Alex fishes a total of three times, what is the probability that he gets all three types of fish? Express your answer as a common fraction.
10. _____ If the game of Tfarcenim allows a player to score 4, 7, 15, 19, 23, 24, or 36 points, and all players start at 0 points, what is the largest integer score that cannot be made?