

Date Completed: _____
Mentor Initials: _____

A mentor can change everything.



Dimensional Analysis

Non-Calculator: Multiple Choice

Number of hours Chris can play each day	2
Number of levels in the video game	25
Average time, in minutes, it takes for Chris to finish a level.	20

- Chris just purchased a new video game. The table above shows information about the video game and Chris's playing ability. If Chris starts playing on a Saturday, what day of the week will he finish the video game?
A) Monday
B) Tuesday
C) Wednesday
D) Thursday
- John's soccer coach tells him to drink 2 quarts of water per day to stay hydrated during soccer season. John is a hipster and only likes to drink water out of an 8-ounce mason jar. How many times must John fill his mason jar at the water fountain in order to get the full recommended 2 quarts per day?
(Note: 1 quart = 32 ounces)
A) 2
B) 4
C) 6
D) 8
- A team of minions can build a sand castle in 20 minutes. The minions head to the beach and start a timer for 9 hours. Mid-day, they stop for 1 hour to go on a picnic. How many sand castles did the minions build in the 9-hour time span?
A) 18
B) 24
C) 27
D) 30

Non-Calculator: Grid In

4. Tula goes to Petco to purchase food for her cat pack. Tula owns three cats and each cat gets a different amount of food each day. Rocky eats 1 cup of food per day. Lars eats 2 cups of food per day, and James eats $\frac{1}{2}$ cup of food per day. Petco sells cat food in 20-pound bags. Assuming that 4 cups of cat food is equal to 1 pound, how many bags should Tula buy to feed the cat pack for the month?

/	○	○		
·	○	○	○	○
0	○	○	○	○
1	○	○	○	○
2	○	○	○	○
3	○	○	○	○
4	○	○	○	○
5	○	○	○	○
6	○	○	○	○
7	○	○	○	○
8	○	○	○	○
9	○	○	○	○

5. Griffey, a newspaper boy, rides his bike 6 miles each morning. Throughout the day, he walks 2 miles, and in the evening, he jogs 10 laps around the track before bed. If 4 laps around the track is equal to one mile, how many miles total does Griffey exercise each day, including biking, walking, and running?

/	○	○		
·	○	○	○	○
0	○	○	○	○
1	○	○	○	○
2	○	○	○	○
3	○	○	○	○
4	○	○	○	○
5	○	○	○	○
6	○	○	○	○
7	○	○	○	○
8	○	○	○	○
9	○	○	○	○

Calculator: Multiple Choice

6. Amelia goes on a backpacking trip in the Sawtooth Mountains. She reads online that The Toxaway to Alice Lake Loop is 19.0 miles roundtrip and takes the average hiker 3 days to complete. Amelia starts hiking, but her GPS watch is set to meters rather than miles. How many meters per day must Amelia hike per day in order to finish her hike in 3 days? Round your answer to the nearest whole digit. (Note: There are approximately 1610 meters in 1 mile).
- A) 10,050
 B) 10,197
 C) 30,590
 D) 31,196

7. The New York Marathon has an official distance of 26.219 miles. Remy completed the marathon in 3.2 hours. What was Remy's average speed, rounded to the nearest whole number, during the marathon in feet per minute? (Note: 1 mile = 5,280 feet)
 - A) 660
 - B) 60
 - C) 721
 - D) 480

8. According to Google Maps, the approximate driving distance between ESM Prep's office in Sacramento to the College Board's is 2,826 miles. Which of the following is closest to that distance in kilometers? (Note: 1 mile is approximately 1.6 kilometers)
 - A) 4,500
 - B) 1,800
 - C) 4,000
 - D) 5,000

9. A recent study of internal medicine residents in the United Kingdom found that in a typical 10-hour work shift the residents only saw their patients for an average of 1.7 hours. The other 8.3 hours were spent doing administrative work. Given the information above, in 1 hour of work approximately how many more minutes are spent doing administrative work than seeing patients?
 - A) 10.2
 - B) 39.6
 - C) 49.8
 - D) 6.6

10. If an average smartphone contains 25 milligrams of gold, and 1 gram of gold sells for \$40.89 what is the minimum number of cell phones that contain at least \$300 worth of gold? (Note: 1 gram = 1000 milligrams)
 - A) 292
 - B) 293
 - C) 294
 - D) 295

11. Modern HDTVs operate at 60 hertz, which means that the TV will refresh the image 60 times every second. If the TV ran continuously for a quarter of an hour, how many times did the TV refresh the image?
- A) 900
B) 54,000
C) 216,000
D) 864,000
12. An Olympic sized swimming pool measures 50 meters long, 25 meters wide, and 2 meters deep. Assuming the density of water is 1.00 grams per milliliter, what mass of water, in kilograms, can an Olympic-sized swimming pool contain?
(Note: 1000 grams = 1kilogram, $1\text{cm}^3 = 1\text{mL}$)
- A) 2,500,000
B) 25,000,000
C) 250,000
D) 25,000

Calculator: Grid In

13. Joules and calories are units of energy. They are directly proportional such that 3 calories are approximately equal to 12.552 joules. How much energy, in calories, is equal to 36 joules?

/	○	○		
.	○	○	○	○
0	○	○	○	○
1	○	○	○	○
2	○	○	○	○
3	○	○	○	○
4	○	○	○	○
5	○	○	○	○
6	○	○	○	○
7	○	○	○	○
8	○	○	○	○
9	○	○	○	○