



Math OER

Level C / Math 20 Overview

Name:

Date:

Reduce fraction answers. No need to change improper fraction answers to mixed numerals.

Show numbered step-by-step answers for partial credit!

1. Find the prime factorization of 108.
2. Write the fraction $\frac{3}{24}$ in percent format.
3. Write 60.22 in percent format.
4. A crate has a length of 12.227 meters. How many kilometers is this? Do not round your answer.
5. Brand A costs \$42.85 for 18 ounces. Brand B costs \$37.77 for 14 ounces. What is the price per ounce for each? Which is the better buy?
6. Stalwart the Wonder Snail crawls 60 yards in 2.2 minutes. How many yards would it crawl in 73 minutes? (Hint: As a first step, find the unit rate of yards per *one* minute.)
7. Superbia City has a population of 951,200 people and an area of 3.4 square miles. Find its population density in people per square mile.
8. Two mad scientists are chatting. One brags that his electro-master has a length of 32 yards. The other mentally changes this amount into meters. How many meters is it? (There are about 1.094 yards in a meter.)
9. Coffee-lover Chuck drinks 14 cups of coffee each day. How many quarts is this each day?

10. A box weighs 227,012 centigrams. How many kilograms is this? Do not round your answer.

11. A crate has a volume of 12.227 liters. How many milliliters is this? Do not round your answer.

12. What is the square root of 196?

13. Write 10.16 as a mixed number.

14. Round the meal price to the nearest dollar to estimate a 20% tip on a meal that costs \$12.19.

15. The sales tax rate in Superbia City is 6%. How much sales tax is put on an item costing \$237?

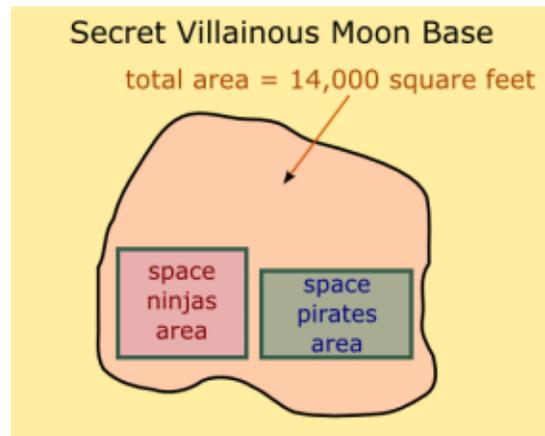
16. Which is more, 14% of 221 or 6% of 233 ?

17. A small business borrows \$4,702 at a 15% annual simple interest rate. It repays the loan after 120 days. How much interest does it owe?

18. Coffee-lover Chuck drinks 23 cups of coffee each day. How many gallons per year is this?

19. Stalwart the Wonder Snail crawls 60 yards in 2.2 minutes. Express this speed in miles per hour.

20. A secret villainous moonbase has total area 14,000 square feet. Two of its rectangular rooms are claimed by the space ninjas (43 feet by 67 feet) and the space pirates (38 feet by 77 feet). What is the area of *all the rest* of the moonbase?



21. A square has perimeter 40 feet. What is its area?

22. A right triangle has sides of length 14 cm, 48 cm, and 50 cm. What is its perimeter and area?

23. Circle A has a radius of 21 inches. Circle B has a diameter of 34 inches. Which has a bigger area? By how much?

24. Solve: $30 = p \times 3$

25. Solve: $-14 \div q = 7$

26. Maria pays for a \$702 payday loan for 20 days with a post-dated check for \$712.39. What was the loan's simple interest rate?

27. A number minus $\frac{1}{63}$ equals $\frac{1}{9}$. What is the number?

28. A car drives 23 miles on 9.3 gallons of gasoline. At this rate, how many gallons are used by a 227 mile trip?

29. A college is expanding from 230 to 851 students. It has 10 instructors. How many more instructors must it hire to maintain its student-to-faculty ratio?

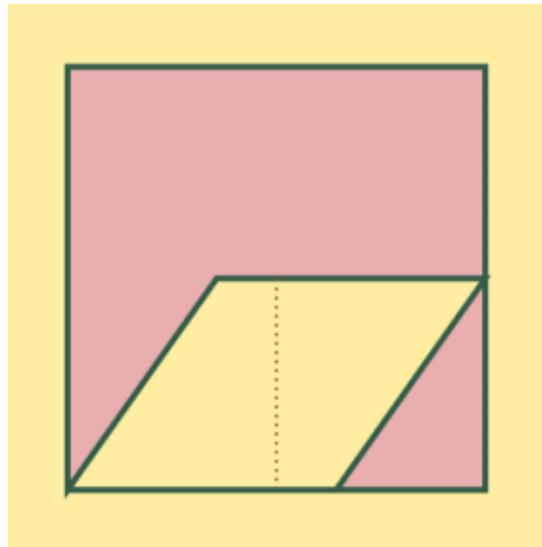
30. 22.7 is 10% of what?

31. A certain car depreciates in value 25% during its first year. That car is worth \$21,000 after its first year. What was its original cost?

32. Sally the Wonder Snail crawls 840 yards in 31 days. What percentage of a mile is this distance?

33. Change the temperature 40 degrees Celsius into degrees Fahrenheit.

34. What is the shaded area? Round to the nearest square foot. The square has side length 21 feet. The parallelogram has base 13.5 feet and height 10.5 feet.



35. An apartment building roof is shaped like two rectangles (the front and back) and two triangles (the sides). The rectangles are 105 feet by 23 feet. The triangles have a base of 22 feet and a height of 19 feet. Each year the apartment maintenance staff buys a powder to sprinkle on the roof to get rid of moss on all 12 apartment buildings in the apartment complex. One container of powder will treat 600 square feet of roof, and costs \$15. How many containers are needed? (Round up so the maintenance staff has enough containers.) How much will they cost?

36. A one-story ranch-style house has a central area in which the rooms are 19 feet high, a right wing in which the rooms are 11 feet high, and a left wing in which the rooms are 15 feet high. The central area is a rectangular space 24 feet by 84 feet, which contains the kitchen, dining room, and living room. The right wing has 5 bedrooms, each 15 feet by 16 feet. The left wing has 5 rooms (master bedroom, study, etc.), each 19 feet by 18 feet. The house needs to be fumigated, which requires a container for every 5,000 cubic feet. Each container costs \$38. How many containers are needed? (Round up so the house gets enough fumigation.) How much will they cost? (Note: the house does have bathrooms but those will be treated separately.)

37. Draw a table with at least four rows of shapes, to demonstrate the pattern $y = 6 \times n + 5$

38. Solve: $9w = 5w + 8$