Calendar Math

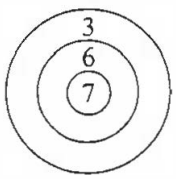
Arthur Jorgensen

Here are math exercises for the month of September 1998.

1. In the Johnson house there are 10 pieces of furniture that are either 4-legged chairs or 3-legged stools. Altogether there are 37 legs. How many chairs and stools are there? This problem can be solved in several ways.
2. If a digital (12-hour) clock is used, how many times in each day

a. does the display show 3 consecutive numerals in ascending order? (for example, 1, 2, 3)
b. show 3 consecutive numerals in descending order? (for example, 3, 2, 1)
c. show 3 numerals which are identical? (for example, 1, 1, 1)

3. If Mary says that 10 + 4 = 2 and 4 6 = 10, what is she referring to?
4. When does ¾ + 5/6 = 8/10?
5. If squares are worth 2 points, circles are worth 3 points, triangles are worth 4 points and rectangles are worth 5 points, draw a figure worth 27 points. (For example, some students can be asked to draw figures and the others are asked to determine their value.)
6. A hardware store sells bulbs for $1.50 which cost $1.00. What fraction of the cost was the gain?
7. If an electrician can install a switch in 3/10 of an hour, how many can he or she install in 6 hours?
8. How many bottles each containing ¾ of a litre can be filled from a jug containing 7½ litres?
9. How many cars will be required to haul 33 passengers to the show if each car can carry only 5 passengers?
10. Tom is hired to work at the service station. He will be paid $1 for the first hour, $2 for the second hour, $4 for the third hour and so on. If he works for 7 hours, how much will he have earned?
11. A pet shop sold a dog and a cat for $84. If the dog was sold for $12 more than the cat, how much was each worth?
12. It takes one minute to cut through a log. At this rate, how long would it take to cut a log into 7 pieces?
13. Mr. Smith can pile the wood in 2 days. If his son does it, it will take 4 days. If they work together, how long will it take them to pile the wood?
14. As one looks at this sequence of numerals, what are possibilities for the next 3 elements of the sequence? 2, 4, 6, ___, ___, ___.
15. If consonants are worth 10 points and vowels are worth 0 points, what is your name worth? This problem can be modified in several ways.
16. Tom buys a hamburger for $2.10 and a soft drink for $0.95. How much change does he get from a $5 bill?
17. In the Zendell family, Lucy is 3 years older than John, but 2 years younger than Susan. The sum of their ages today is 29 years. How old is each of the children?
18. How many ways can you make change for a quarter, if you may use any combination of pennies, nickels and dimes?
19. A farmer wants to plant 5 trees. The distance from one tree to the next tree is 10 metres. How far is it from the first tree to the last tree?
20. What is the highest score below 50 that is impossible to score on the given dart board?



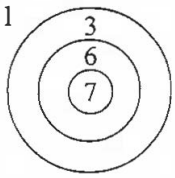
21. Seventeen toothpicks are arranged to make 6 squares. Can you remove 5 of the toothpicks and leave 3 squares?

22. Sandy sold 15 comic books for $7.50. On each book she wrote a price of $0.50. Did Sandy correctly price the books?
23. How many 4-digit numerals can you make using the digits 1, 9, 9, 3?
24. Make 2 triangles with 5 matches.
25. Melissa has seven coins which are composed of quarters and dimes. If their total value is $1.30, how many of each coin does she have?

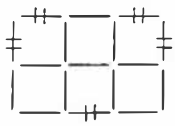
26. A man sold a bike for $90, bought it back for $80 and resold it for $100. What did he make or lose on the total deal?
27. In solving a problem, Tim divided instead of multiplying a number by 8. The answer he got was 6. What was the correct answer?
28. Use the clues to identify the suspect: I am greater than 0.28. I am less than 0.8. My denominator is divisible by 2. My numerator is a prime number. Suspects: 1/8, 9/10, 3/5, 3/8, 7/6, 4/7, 5/6.
29. Fill in the license plate with 3 prime numbers whose sum is 12. D ___ E __ W.
30. Find a 2-digit number where the product of the digits is 4 times their sum. You may want to try this problem to find numbers where the product is 2, 3, 5, ... times the sum. Look for a pattern.

Answers

1. 7 chairs, 3 stools
2. a. 8, b. 10, c. 10
3. The clock time
4. When you are adding ratios
5. Each student's answer can be different
6. ½
7. 20 switches
8. 10 bottles
9. 7 cars
10. $127
11. Cat is worth $36, dog is worth $48
12. 6 minutes
13. 1 days
14. a. 8, 10, 12; b. 10, 16, 26
15. Answers will differ
16. $1.95
17. John is 7, Lucy is 10, Susan is 12
18. 12 ways
19. 40 metres
20. 11



21.



22. Yes. 15 × $0.50 = $7.50
23. 10
24.

25. 4 quarters, 3 dimes
26. He needs $30
27. 384
28. 3/8
29. 2, 3, 7
30. 12 and 36 are two possible answers

Revolving Wheels

The front wheel of a bicycle is four times as large as the rear wheel, and the rear wheel makes one complete revolution each time the pedals make 1/3 of a revolution. How many revolutions do the front wheels make when the pedals make 8 revolutions?