

# WORD PROBLEMS

CANSU OLCE

A STAR MATHS ([www.astarmaths.com.au](http://www.astarmaths.com.au))

1. If the difference between the squares of two consecutive even natural numbers is 84, what is the smaller number?
2. If 5 books and 2 pens cost \$60 and 4 books and 3 pens cost \$55, how much is a book more expensive than a pen?
3. There are 34 men and 10 women in a room. How many married couples should come in so that there are 3 times as many men as women?
4. There are 18 benches in a park. Some of them have seats for two, others for three. If they have enough seats for 42 people, how many benches are three seaters?
5. If the students in a class sit at the desks 2 by 2, 5 remain standing. If they sit 3 by 3, two desks remain unoccupied. How many students are there in the class?
6. Susan has 5 times as much money as Catherine does. If Susan lends Catherine \$12, she will have triple the amount that Catherine has. How many dollars does Susan initially have?
7. The students in a school are divided into 16 groups of equal size. If there were 12 groups, each group would contain 5 more students. How many students are there in the school?

8. In a game, players gain 25 points with each right answer and lose 30 with each wrong answer. If a player has 450 points after answering 40 questions, how many of the answers were wrong?
9. An iron rod is split to 10 equal pieces. If each piece were 6 cm shorter, it would be possible to split the rod into 12 equal pieces. How long is the rod in cm?
10. Someone walks up a staircase three steps and down same staircase two steps at a time. Going down takes 6 more steps. How many stairs does the staircase have?
11. In a hospital there are 60 patients for each doctor and 30 patients for each nurse. If the number of doctors, nurses and patients is 378, how many nurses are there?
12. Nora is  $x$ th from the front and  $(3x-2)$ th from the back in a queue. How many people are ahead of her if there are 61 people waiting in the queue?
13. Adding 4 from  $\frac{3}{7}$  of a number gives itself. What is the number?
14. If  $\frac{1}{12}$  of a number is 150, what is  $\frac{3}{5}$  of it?

15. The value of a fraction is  $\frac{1}{4}$ . It becomes  $\frac{2}{3}$  when we add 2 to the numerator and subtract 2 from the denominator. What was the sum of the numerator and denominator at the beginning?
16.  $\frac{3}{5}$  of a roll of fabric is sold first. Afterwards,  $\frac{1}{3}$  of the rest is sold. If 16m remain at the end, how long was the roll in m at the beginning?
17. A bottle full of water weighs 830 grams. It weighs 700 grams after emptying  $\frac{1}{4}$  of it. How many grams does the empty bottle weigh?
18.  $\frac{5}{8}$  of a container is empty. If  $\frac{1}{3}$  of the water is used, it takes 48 litre to fill it up. What is its full capacity in litre?
19. If  $\frac{1}{6}$  of a stick is cut off, its midpoint shifts by 8cm. What is its initial length in cm?
20.  $\frac{2}{5}$  of the students in a class are male and  $\frac{5}{6}$  of them are wearing glasses. There are 6 females without glasses. If 10 students are not wearing glasses, how many students are female?

21. A ball is dropped from a height. With each bounce, it rises to a height equal to  $\frac{5}{6}$  of the previous height. If it rises to 125 cm after hitting the ground for the third time, what was the initial dropping height?
22. A water tank has some water in. When 200 litres are added,  $\frac{5}{7}$  of it is full. If 100 litres are drained instead,  $\frac{2}{7}$  of it is full. What is the capacity of the tank in litre?
23. The difference between the ages of two brothers is 3. If the sum of their ages four years later will be 31, what is the age of the younger one?
24. Bill's age is four times Charlie's age. If the difference between their ages is 18, how old is Bill?
25. The age of a father is equal to the sum of his three children's ages, each of which was born three years apart. If he is 45, how old is the middle child?
26. The ratio of Susan's and Eva's present ages is  $\frac{3}{5}$ . If the ratio will be  $\frac{8}{11}$  seven years later, what is the difference between their ages?

27. Anna is 12 years old. Her father is 36 years old. How many years later will her father be twice her age?
28. The sum of a child's and the parents' ages is 67. If the father is 3 years older than the mother, who is 12 years older than twice her child's age, how old is the father?
29. Two sisters' ages are  $2m+10$  and  $m+9$ . If the sum of their ages are five times the difference between their ages, what is  $m$ ?
30. Sophia was 6 when Jessica was born. If the sum of their ages is 50, how old is Sophia?
31. The sum of Ima's and Charles' ages is 72 now. When Charles reaches Ima's age, the sum will be 84. How old is Charles?
32. A worker sets aside 20% of his wage each month, saving 1200 pounds in 5 months. How many pounds does the worker get paid each month?
33. 10 girls join a class, increasing the girls percentage from 20% to 36%. How many boys are there in this class?

34. Several flatmates split the rent evenly. 2 people move in, reducing each one's share by 25%. How many people were living there before?
35. Alex has 25% of the amount of money Emma has. After she lends him 30 pounds, he has 40% of hers. How many pounds did Alex have before?
36. If a product is sold for \$350 at a loss of 30%, what would its price in dollars be at a profit of 30%?
37. A fruit seller sold 3 lemons for \$7. He had bought 4 of them for \$5. If he earned \$65 by selling all his lemons, how many of them were sold?
38. 20 kg of salty water which is 30% salt and 30 kg of salty water which is 20% salt are mixed. What per cent salt is the new solution?
39. How many litres of water should be evaporated to increase the sugar content in 50 litre of sugary water from 60% to 80%?

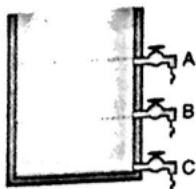
40. 80 litres of salty water has 20% salt.  $\frac{1}{4}$  of it is poured and replaced by an equal amount of pure water. What per cent water is the new solution?
41. Two mixtures of flour and sugar are mixed. One is 300 g with 2% sugar while the other is x gram with 10% sugar. What is x if the new mixture is 4% sugar?
42. Kenny and Michael can finish a job in 3 and 4 days, respectively. How many of it can they both complete in one day?
43. A full pool can be drained through valve A in 6 hours and valve B in 12 hours. In how many hours do both valves drain the full pool?
44. Sean and Bill can finish a job in 8 hours when they work together. If they worked alone, Sean could finish it 12 hours earlier than Bill could. How many hours it take Sean alone to complete it?
45. A work can be done by hand in 18 minutes and by machine in 6 minutes. A worker begins working by machine and goes on working by hand 2 minutes later. In how many minutes is the work finished?



46. Sandra can work twice as fast as Sam and three times as fast as Samantha. If the three can do a job in 6 days when they work together, in how many days can Sandra alone complete it?

47. A master shoemaker makes 4 pairs of shoes in 3 days. An apprentice makes that many in 5 days. In how many days two masters and one apprentice, working together, make 52 pairs?

48.



In the water tank is the figure above, the valves A, B and C are identical and their levels split the pool into equal pieces. If C alone can drain the full pool in 54 minutes, in how many minutes is the full pool drained when all valves are turned on at the same instant?

ANSWER KEY

1. 20

2. 5

3. 2

4. 6

5. 27

6. 120

7. 240

8. 10

9. 360

10. 36

11. 252

12. 15

13. 7

14. 1080

15. 10

16. 60

17. 290

18. 96

19. 96

20. 36

21. 36

22. 700

23. 10

24. 24

25. 15

26. 6

27. 12

28. 31

29. 7

30. 28

31. 33

32. 1200

33. 32

34. 6

35. 70

36. 650

37. 60

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38.24

39.12.5

40.85

41.100

42.7/12

43.4

44.12

45.14

46.11

47.15

48.33

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