

1. The average age of 20 students in a class is 16 years. When a new student joins, the average becomes 16.5 years. [Find the age of the new student.](#)
2. The mean of 12 numbers is 18. Five of the numbers are 12, and four of the numbers are 21. The remaining three numbers are equal. [Find the value of each of the remaining three numbers.](#)
3. A car driver travels half the distance at 60 km/h and the other half at 90 km/h. [Find the driver's overall average speed for the journey.](#)
4. The average grade of 30 students in a test is 75. If the teacher adds her own score, the average increases to 76. [Find the teacher's score.](#)
5. The mean of 15 numbers is 10. Seven of the numbers are 8, and five of the numbers are 12. The remaining three numbers are all equal. [Find the value of each of these three numbers.](#)
6. The average salary of 40 employees in a company is £2,000. A new employee is hired, increasing the average salary to £2,050. [Find the new employee's salary.](#)
7. A train covers half its journey at 80 km/h and the other half at 120 km/h. [Find the train's overall average speed for the entire journey.](#)
8. The mean of 20 numbers is 25. Nine of the numbers are 20, six of the numbers are 28, and the remaining five numbers are equal. [Find the value of each of these five numbers.](#)
9. The average score of a group of 18 students is 54. When a new student joins, the average becomes 55. [Find the score of the new student.](#)
10. A cyclist rides half the distance at 12 km/h and the other half at 18 km/h. [Find the cyclist's average speed for the entire journey.](#)
11. The mean of 8 numbers is 30. Three of the numbers are 24, two of the numbers are 36, and the remaining three numbers are equal. [Find the value of each of these three numbers.](#)
12. The average age of a group of 16 people is 35 years. When a new person joins, the average rises to 36 years. [Find the age of the new person.](#)

1. New student's age

- Original total = $20 \times 16 = 320$
- New total = $21 \times 16.5 = 346.5$

New student's age:

$$346.5 - 320 = \boxed{26.5 \text{ years}}$$

2. Remaining three numbers

- Total = $12 \times 18 = 216$
- Known total = $5 \times 12 + 4 \times 21 = 60 + 84 = 144$

Remaining total:

$$216 - 144 = 72$$

Each of the three numbers:

$$72 \div 3 = \boxed{24}$$

3. Average speed of car

Assume total distance = 180 km $\rightarrow$ each half = 90 km

- Time first half = $90 \div 60 = 1.5 \text{ h}$
- Time second half = $90 \div 90 = 1 \text{ h}$

Total time = 2.5 h

Average speed:

$$180 \div 2.5 = \boxed{72 \text{ km/h}}$$

4. Teacher's score

- Original total = $30 \times 75 = 2250$
- New total = $31 \times 76 = 2356$

Teacher's score:

$$2356 - 2250 = \boxed{106}$$

5. Remaining three numbers

- Total = $15 \times 10 = 150$
- Known total = $7 \times 8 + 5 \times 12 = 56 + 60 = 116$

Remaining total:

$$150 - 116 = 34$$

Each number:

$$34 \div 3 = \boxed{11\frac{1}{3}}$$

6. New employee's salary

- Original total = $40 \times 2000 = 80,000$
- New total = $41 \times 2050 = 84,050$

New employee's salary:

$$84,050 - 80,000 = \boxed{\pounds 4,050}$$

7. Train's average speed

Assume total distance = 200 km $\rightarrow$ each half = 100 km

- Time first half = $100 \div 80 = 1.25$ h
- Time second half = $100 \div 120 = \frac{5}{6}$ h

Total time = $\frac{25}{12}$ h

Average speed:

$$200 \div \frac{25}{12} = \boxed{96 \text{ km/h}}$$

8. Remaining five numbers

- Total = $20 \times 25 = 500$
- Known total = $9 \times 20 + 6 \times 28 = 180 + 168 = 348$

Remaining total:

$$500 - 348 = 152$$

Each number:

$$152 \div 5 = \boxed{30.4}$$

9. New student's score

- Original total = $18 \times 54 = 972$
- New total = $19 \times 55 = 1045$

New student's score:

$$1045 - 972 = \boxed{73}$$

10. Cyclist's average speed

Assume total distance = 60 km $\rightarrow$ each half = 30 km

- Time first half = $30 \div 12 = 2.5$ h
- Time second half = $30 \div 18 = \frac{5}{3}$ h

Total time = $\frac{25}{6}$ h

Average speed:

$$60 \div \frac{25}{6} = \boxed{14.4 \text{ km/h}}$$

11. Remaining three numbers

- Total = $8 \times 30 = 240$
- Known total = $3 \times 24 + 2 \times 36 = 72 + 72 = 144$

Remaining total:

$$240 - 144 = 96$$

Each number:

$$96 \div 3 = \boxed{32}$$

12. New person's age

- Original total = $16 \times 35 = 560$
- New total = $17 \times 36 = 612$

New person's age:

$$612 - 560 = \boxed{52 \text{ years}}$$
