MEAN

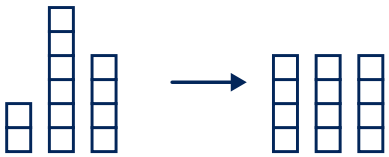
BUILDING BLOCKS

NAME _____ CLASS _____ DATE _____

KEY IDEA

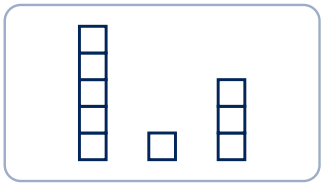
The mean shares everything out equally.

1. Add them all up.
2. Share (÷) by how many there are.



mean = 4

1 Move cubes so all the towers are the same height.



Here are the towers

Draw them all the same height

a) Cubes altogether: ☐

b) Number of towers: ☐

c) Each tower gets: ☐ ↑ this is the mean

2 Use the machine to find the mean.

			total			mean
a)	4, 9, 5	→ add up →	☐	→ ÷ 3 →	☐	
b)	8, 1, 5, 6	→ add up →	☐	→ ☐ →	☐	

3 Four friends share their sweets out fairly.



Amy Ben Cal Dev

a) Sweets altogether: ☐

b) Each child gets: ☐

4 Find the mean. Remember: 0 is a value too, so count it!

a) 6, 2, 10 → total ☐ ÷ 3 = ☐

b) 5, 0, 4, 3 → total ☐ ÷ ☐ = ☐

MEAN

SUPPORT

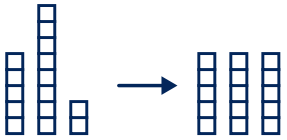
NAME _____ CLASS _____ DATE _____

KEY IDEA

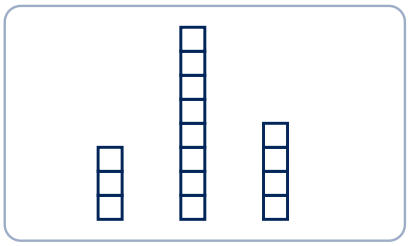
mean = total ÷ number of values

Example: 5, 8, 2

5 + 8 + 2 = 15 15 ÷ 3 = 5 so the mean is 5



1 Here are three towers of cubes.



a) How many cubes altogether? ☐

b) How many towers are there? ☐

c) What is the mean number of cubes? ☐

2 Work out the mean of each set of numbers. Zeros count!

		total		how many		mean
a)	7, 3, 8	☐	÷	☐	=	☐
b)	10, 4, 6, 8	☐	÷	☐	=	☐
c)	5, 0, 9, 6	☐	÷	☐	=	☐
d)	12, 15, 9, 14, 10	☐	÷	☐	=	☐

3 Find the mean. Remember to write the units.

a) Four books cost £6, £9, £5 and £8. Find the mean cost. ☐

b) Three parcels weigh 2 kg, 7 kg and 3 kg. Find the mean mass. ☐

4 Leo wants the mean of 8, 6 and 13. He types this into his calculator.

8 + 6 + 13 ÷ 3 =

18.33333333

a) Explain Leo's mistake.

.....

b) What is the correct mean? ☐

MEAN

CORE

NAME _____ CLASS _____ DATE _____

KEY IDEA

mean = total of the values ÷ number of values. If you know the mean, then total = mean × number of values. Every value counts, including zeros.

FLUENCY

1 Work out the mean of each set of data.

a) **14, 9, 11, 6** Mean: ☐

b) **2.5, 4, 3.5, 6** Mean: ☐

c) **0, 7, 3, 0, 5** Mean: ☐

d) **3, 8, 6, 5** Mean: ☐

2 Find the missing values.

a) The mean of four numbers is 9. Three of the numbers are 7, 12 and 5. Find the fourth number. ☐

b) Five parcels have a mean mass of 3 kg. Four of them weigh 2 kg, 4 kg, 1.5 kg and 3 kg. Find the mass of the fifth parcel. ☐

REASONING

3 The mean of five cards is 8.

?	?	?	?	?	**mean = 8**

a) What is the total of the five cards? ☐

b) A sixth card showing 8 is added. What is the new mean? ☐

c) Instead, a sixth card showing 14 is added. How does the mean change? Why?

.....

4 A survey finds that the mean number of children in a family is 2.4. Mo says, "This must be wrong, because you can't have 0.4 of a child." Do you agree with Mo? Explain.

.....

.....

MEAN

GREATER DEPTH

NAME _____ CLASS _____ DATE _____

REASONING

1 Is each statement always, sometimes or never true? Circle your answer.

If it is sometimes true, give an example of when it is true and when it is not.

a) The mean of a set of whole numbers is a whole number. ALWAYS SOMETIMES NEVER

b) If you double every value, the mean doubles. ALWAYS SOMETIMES NEVER

c) Adding a 0 to a set of data makes the mean smaller. ALWAYS SOMETIMES NEVER

PROBLEM SOLVING

2 Five cards have a mean of 7. Four of the cards are shown.

3	10	6	9	

mean = 7

a) What number is on the fifth card? ☐

b) A sixth card is added and the mean becomes 8. What is on the sixth card? ☐

3 In a quiz, 6 pupils in group A have a mean score of 15. 4 pupils in group B have a mean score of 20.

a) Find the mean score of all 10 pupils. ☐

b) Explain why the answer is not the mean of 15 and 20.

★ CHALLENGE FOR ALL

4 Four cards show four different whole numbers. Their mean is 5 and the largest card is 9.

☐ ☐ ☐ ☐ mean = 5

a) Find a possible set of cards and write them above.

b) What is the smallest possible value of the second largest card? Explain.

MEAN – ANSWERS

ANSWERS

BUILDING BLOCKS

1. a) 9 · b) 3 · c) 3 (three towers of 3 cubes)
2. a) total 18, mean 6 · b) total 20, ÷ 4, mean 5
3. a) 16 · b) 4 each
4. a) total 18, 18 ÷ 3 = 6 · b) total 12, 12 ÷ 4 = 3

SUPPORT

1. a) 15 · b) 3 · c) 5
2. a) 18 ÷ 3 = 6 · b) 28 ÷ 4 = 7 · c) 20 ÷ 4 = 5 · d) 60 ÷ 5 = 12
3. a) £7 · b) 4 kg
4. a) The calculator divided only 13 by 3, then added 8 and 6. Add first (or use brackets): (8 + 6 + 13) ÷ 3 · b) 27 ÷ 3 = 9

CORE

1. a) 10 · b) 4 · c) 3 · d) 5.5
2. a) 4 × 9 = 36; 36 – 24 = 12 · b) 5 × 3 = 15 kg; 15 – 10.5 = 4.5 kg
3. a) 40 · b) 48 ÷ 6 = 8 · c) goes up: 54 ÷ 6 = 9, because 14 is greater than the mean of 8
4. Disagree. The mean is the total number of children ÷ the number of families, which need not be a whole number. It describes a typical value; no family has to have 2.4 children.

GREATER DEPTH

1. a) sometimes (1, 2, 3 has mean 2; 1, 2 has mean 1.5) · b) always · c) sometimes (true unless the mean is already 0, e.g. 0, 0)
2. a) 35 – 28 = 7 · b) 6 × 8 = 48; 48 – 35 = 13
3. a) (90 + 80) ÷ 10 = 17 · b) The groups are different sizes; group A has more pupils, so the overall mean is nearer 15 than 20 (17.5 would need equal groups).
4. a) total 20, e.g. 1, 4, 6, 9 or 2, 4, 5, 9 · b) 5: the other three cards are different and total 11, e.g. 2, 4, 5; if the second largest were 4 or less the three cards could total at most 4 + 3 + 2 = 9