

SIGMABUDGIE · GRADE 4

Data: Graphs, Mean & Range

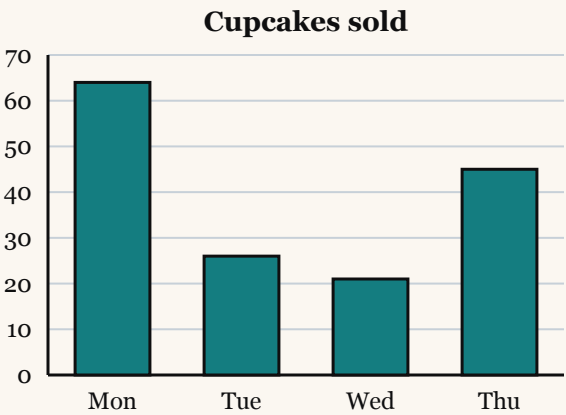
A gentle walkthrough & a 24-question exam

Part 1 walks through graphs, tables, mean, and range from the very beginning, with drawings. Part 2 is a 24-question exam that starts easy and slowly builds to harder, ISEE-style reasoning questions. Work through the lesson together first, then let your child try the exam. The answer key at the back explains every question.

1 · Scaled bar graphs

When the numbers are big, the side counts by **10s** (or 5s, or 100s). A bar that stops between two lines is read by halving: between 40 and 50 is **45**.

Monday: 64 (just past 60). Tuesday: 26. Wednesday: 21. Thursday: 45.



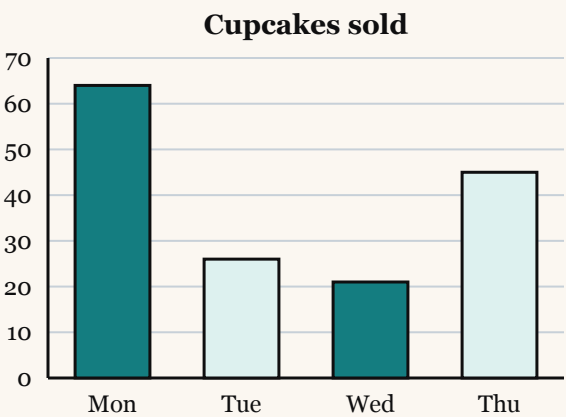
the side counts by 10s

2 · Best day minus worst day

"How many more were sold on the best day than the worst?" Best is Monday (64), worst is Wednesday (21).

$64 - 21 = 43$.

Find the tallest and shortest first, then subtract.



$64 - 21 = 43$

3 • Totals and halves

Add every bar for the total: $64 + 26 + 21 + 45 = \mathbf{156}$. "Which days together sold more than half?" Half of 156 is 78; Monday + Thursday = 109, so yes.

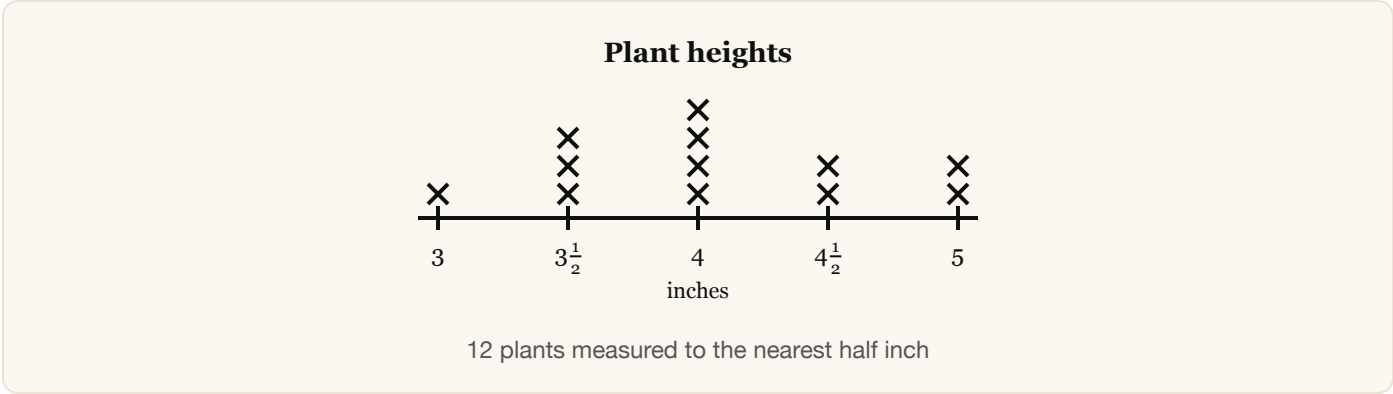
4 • Pictographs with big keys

Here ★ = 10 stickers, so a half star is 5. Ava has 4 stars and a half: **45**. Kim has 5 and a half: **55**.
Read the key, then count by the key. Half symbols are half the key.



5 • Line plots with fractions

A line plot counts how often each measurement happened. The marks can be halves or quarters. Four plants are **4 inches** tall (4 Xs); how many are taller than 4? $2 + 2 = \mathbf{4}$.
How many plants in all? Count every X: $1 + 3 + 4 + 2 + 2 = \mathbf{12}$.



6 • Tables

A table is a graph without bars. Read across the row you need. Sam scored **53**. Who scored the least? **Ava**, 38.

Tables often ask for a difference: Sam – Ava = $53 - 38 = 15$.

Player	Score
Mia	42
Leo	39
Ava	38
Sam	53

four scores

7 • Range: largest minus smallest

The **range** tells how spread out the numbers are: **largest** – **smallest**. For 45, 26, 44, 41, 50: largest 50, smallest 26, range **24**.

Find the two ends first. The middle numbers do not matter for the range.

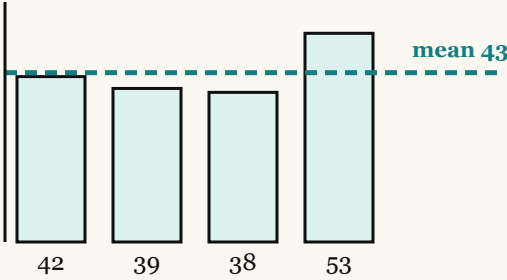


$range = 50 - 26 = 24$

8 • Mean: share it out evenly

The **mean** (average) is what each would get if the total were shared evenly. Scores 42, 39, 38, 53: total 172. Four scores, so $172 \div 4 = 43$.

The dashed line shows the mean: the bars above it would fill the gaps below it.



$(42 + 39 + 38 + 53) \div 4 = 43$

9 • Mean of a graph

You can average bars too. Cupcakes: $64 + 26 + 21 + 45 = 156$, over 4 days: $156 \div 4 = \mathbf{39}$ a day.

The mean is always between the smallest and largest value. If it is not, recheck your adding.

10 • A missing value from the mean

"The mean of 3 numbers is 20. Two of them are 15 and 22. What is the third?" Total must be $3 \times 20 = 60$. $60 - 15 - 22 = \mathbf{23}$.

Mean $\times$ count = total. Then subtract what you know.

11 • Data in words

Tests often skip the picture: "A graph shows sales: Mon 59, Tue 54, Wed 21. How many more on the best day than the worst?" $59 - 21 = \mathbf{38}$.

Write the numbers in a quick list, mark the biggest and smallest, then answer.

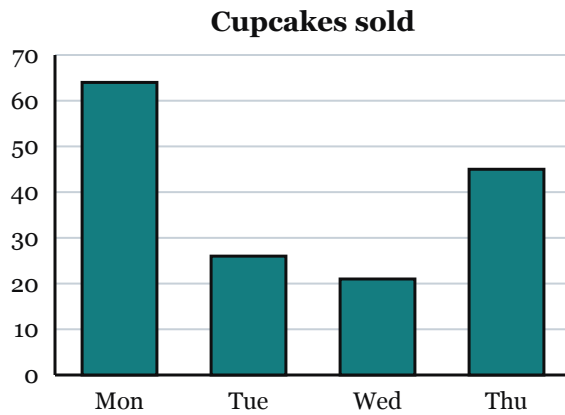
12 • Which statement is true?

Some questions give four sentences about a graph. Check each against the numbers. "Tuesday sold more than Wednesday" (26 vs 21: true). "Thursday sold twice Tuesday" (45 vs 52: false).

Test every choice; do not stop at the first one that sounds right. You are ready for the test! 🎉

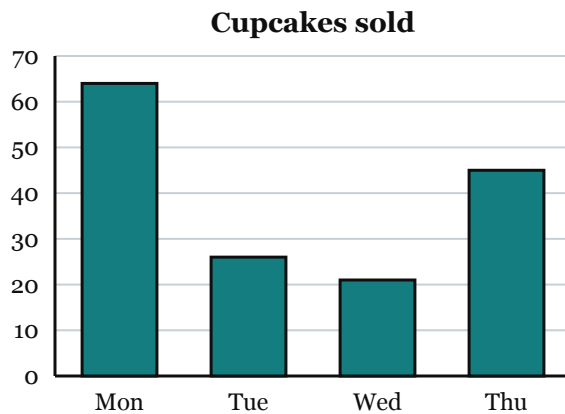
Read each drawing first, then choose the best answer. Take your time, there is no clock here. Questions start gentle and get harder toward the end. Circle your answer.

1 How many cupcakes were sold on Thursday?



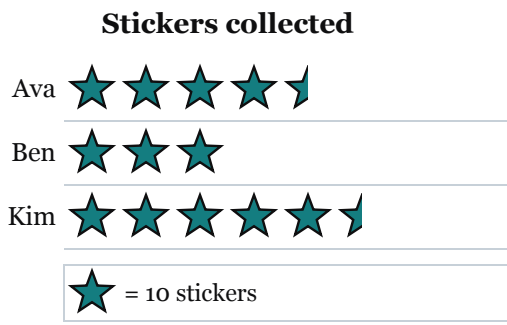
- A** 40
- B** 45
- C** 50
- D** 64

2 Which day had the fewest sales?



- A** Tuesday
- B** Monday
- C** Thursday
- D** Wednesday

3 How many stickers does Ben have?



- A 30

B 3
- C 35

D 25

4 Who scored the least?

Player	Score
Mia	42
Leo	39
Ava	38
Sam	53

- A Leo

B Mia
- C Ava

D Sam

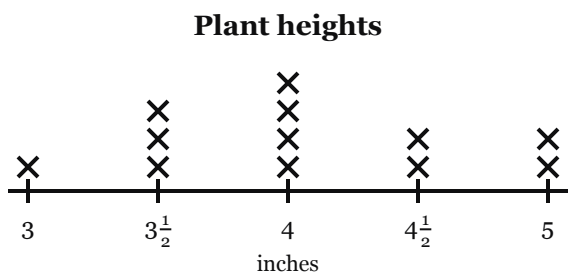
5 A set of numbers is 45, 26, 44, 41, 50. What is the range (largest minus smallest)?

- A 24

B 50
- C 26

D 9

6 How many plants are exactly 4 inches tall?

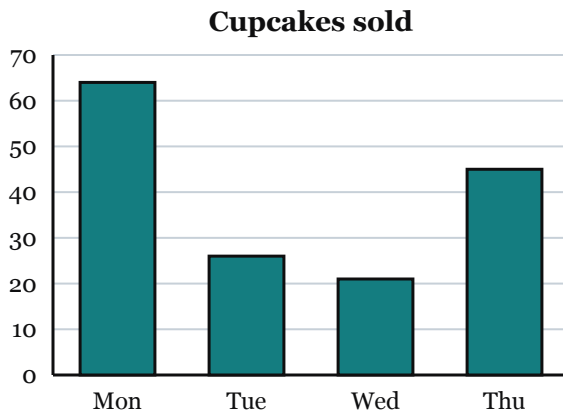


- A 3

B 2
- C 12

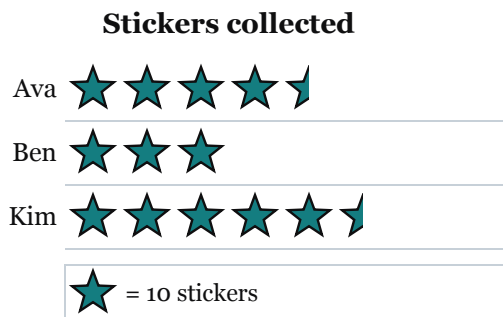
D 4

- 7 How many more cupcakes were sold on the best day than on the worst day?



- A 38 B 19
C 43 D 85

- 8 How many stickers does Ava have?



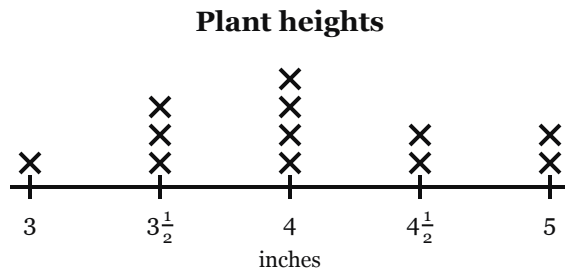
- A 40 B 45
C 50 D 4 1/2

- 9 What is the average (mean) of the four scores?

Player	Score
Mia	42
Leo	39
Ava	38
Sam	53

- A 42 B 172
C 38 D 43

- 10** How many plants are taller than 4 inches?



- A** 4
- B** 2
- C** 8
- D** 6

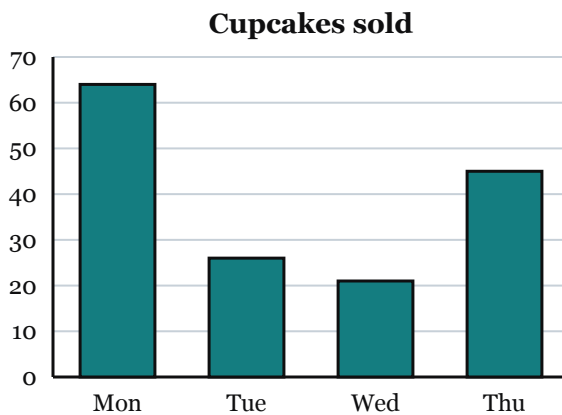
- 11** A graph shows sales: Mon 59, Tue 54, Wed 21. How many more were sold on the best day than the worst?

- A** 33 **B** 38
C 5 **D** 134

- 12** A set of numbers is 13, 42, 46, 26, 57. What is the range?

- A** 57
- B** 13
- C** 44
- D** 31

- 13** How many cupcakes were sold in all four days?



- A** 156
- B** 146
- C** 166
- D** 136

14 What is the mean of 10, 20, and 30?

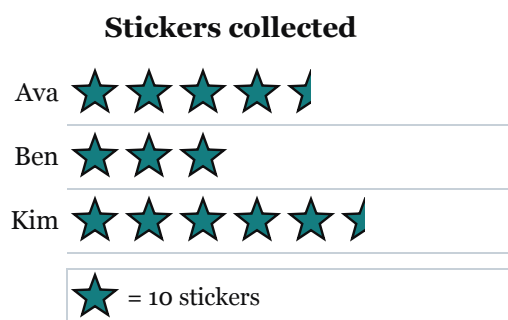
A 30

B 60

C 20

D 10

15 How many more stickers does Kim have than Ben?



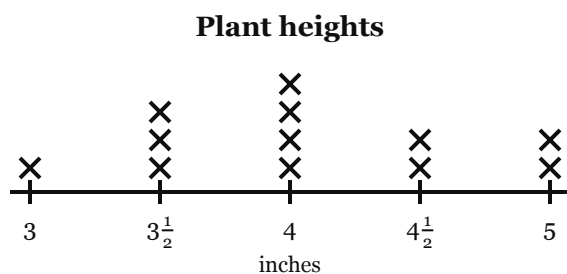
A $2\frac{1}{2}$

B 20

C 30

D 25

16 How many plants were measured in all?



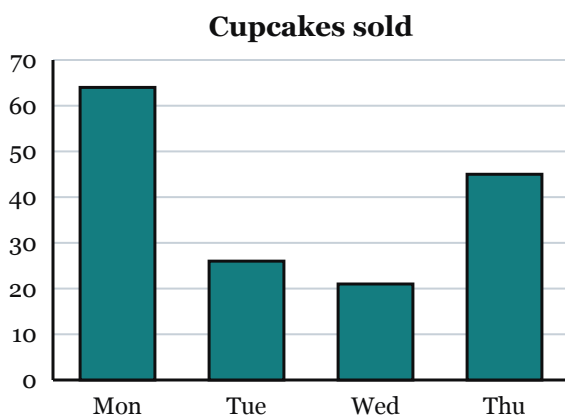
A 5

B 12

C 10

D 14

- 17** What was the mean number of cupcakes sold per day?



- A** 43
- B** 39
- C** 156
- D** 45

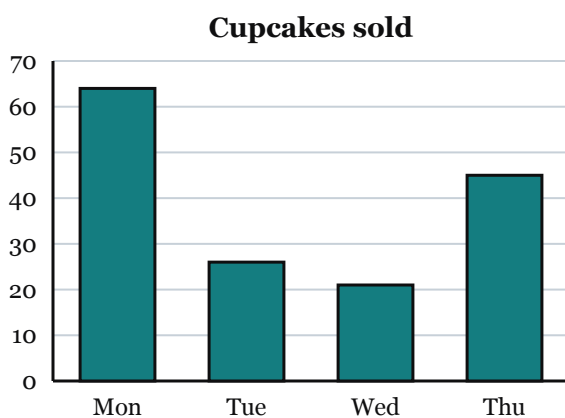
- 18** What is the average (mean) of 42, 39, 38, 53?

- A** 43
- B** 42
- C** 44
- D** 172

- 19** The mean of 3 numbers is 20. Two of the numbers are 15 and 22. What is the third number?

- A** 20 **B** 17
C 23 **D** 37

- 20** Which statement is true?



- A** Thursday sold twice as many as Tuesday.
- B** Monday sold fewer than Thursday.
- C** Wednesday sold more than 25.
- D** Tuesday sold more than Wednesday.

21 A set of numbers is 8, 12, 7, 12, 11. What is the range and what is the mean?

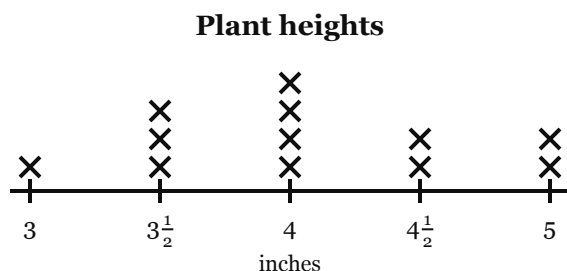
A range 12, mean 10

B range 5, mean 12

C range 4, mean 11

D range 5, mean 10

22 What is the range of the plant heights?



A 5 inches

B 2 inches

C 3 inches

D $1\frac{1}{2}$ inches

23 Four friends have a mean of 12 stickers each. One more friend joins with 22 stickers. What is the new mean?

A 14

B 17

C 12

D 22

24 Mia's scores are 40, 50, and 60. What score does she need on a 4th test for a mean of 55?

A 55

B 65

C 70

D 60

ANSWER KEY & EXPLANATIONS

- 1 B** The Thursday bar stops halfway between 40 and 50.
-
- 2 D** The shortest bar is Wednesday, 21.
-
- 3 A** Each ★ is 10. Ben has 3 stars: 30.
-
- 4 C** Ava scored 38, the lowest number in the table.
-
- 5 A** $50 - 26 = 24$.
-
- 6 D** Count the Xs above the 4: there are 4.
-
- 7 C** Monday 64, Wednesday 21. $64 - 21 = 43$.
-
- 8 B** 4 stars = 40, plus a half star = 5. 45.
-
- 9 D** $42 + 39 + 38 + 53 = 172$. $172 \div 4 = 43$.
-
- 10 A** 4 1/2 inches: 2 plants. 5 inches: 2 plants. $2 + 2 = 4$.
-
- 11 B** $59 - 21 = 38$.
-
- 12 C** $57 - 13 = 44$.
-
- 13 A** $64 + 26 + 21 + 45 = 156$.
-
- 14 C** $10 + 20 + 30 = 60$. $60 \div 3 = 20$.
-
- 15 D** Kim 55, Ben 30. $55 - 30 = 25$.
-
- 16 B** Count every X: $1 + 3 + 4 + 2 + 2 = 12$.
-
- 17 B** $156 \div 4 = 39$.
-
- 18 A** Total 172, divided by 4 is 43.
-
- 19 C** Total = $3 \times 20 = 60$. $60 - 15 - 22 = 23$.
-
- 20 D** $26 > 21$ is true. Twice 26 is 52, not 45. Monday (64) beats Thursday. Wednesday is 21.
-
- 21 D** Range $12 - 7 = 5$. Mean $(8 + 12 + 7 + 12 + 11) \div 5 = 50 \div 5 = 10$.
-
- 22 B** Tallest 5, shortest 3. $5 - 3 = 2$ inches.
-
- 23 A** Four friends have $4 \times 12 = 48$. Add 22: 70. $70 \div 5 = 14$.
-
- 24 C** Four tests at mean 55 need a total of 220. $40 + 50 + 60 = 150$. $220 - 150 = 70$.
-