



Types of data

About 55 minutes Calculator allowed 45 marks

Date _____

A Do Now

The first question is what today's lesson needs. The others bring back earlier topics.

A1 Needed today [2 marks] Hypothesis: a greater proportion of Year 11 students than Year 9 students walk to school. In a survey, 14 of 40 Year 11 students and 100 of 250 Year 9 students walk to school. Use percentages to decide whether this supports the hypothesis. Answer	A2 Maths skill [2 marks] After a 60% increase, the price of a bike is £928. What was the price before the increase? Answer
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Answer A3 Maths skill [2 marks] Amy and Ben share some sweets in the ratio 2 : 5. Ben gets 36 more sweets than Amy. How many sweets are there altogether? Answer	A4 Maths skill [2 marks] Work out 0.29^2 . Answer
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B Example, then your turn

Your teacher works through each example with you. Then try the one beside it.

EXAMPLE 1

A vet records each cat's breed, number of kittens and mass in kg. Write down the type of each: qualitative, discrete or continuous.

Hint Words: qualitative. Counted: discrete.
Measured: continuous.

B1 A car dealer records for each car: its colour, its number of doors, and its length in metres. Write down the type of each. _____ _____	[3 marks]
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EXAMPLE 2

A survey records each person's holiday type (beach, city, camping) and enjoyment (poor, fair, good). Categorical or ordinal? Which average for each?

Hint Does the data have an order?

B2 A gym records each member's favourite class (yoga, spin, boxing) and level (beginner, improver, advanced). Categorical or ordinal? Which average for each?

EXAMPLE 3

25 hotel guests rate their room. Find the median rating.

Rating	Poor	Fair	Good	Very good
Guests	3	6	10	6

Hint Add the frequencies until you pass the 13th guest.

B3 35 shoppers score a shop's service from 1 to 5. Find the median score.

Score	1	2	3	4	5
Shoppers	2	5	9	11	8

Answer

EXAMPLE 4

Leah uses a football fans' website for the crowd at her club's home games. Is her data primary or secondary? Give one reason it may not be reliable.

Hint Who collected it? Can she check how?

B4 Omar uses hotel prices from a holiday company's advert. Primary or secondary? Give one reason it may not be reliable.

EXAMPLE 5

Zara has the heights of 30 students in one class and the arm spans of 30 students in another. Can she draw a scatter diagram of height against arm span? Explain.

Hint Each point on a scatter diagram is one person.

B5 On each of 20 days a council records the cars on School Lane and the children walking to school. Is this bivariate? Explain, and name a suitable diagram.

EXAMPLE 6

Ravi's hypothesis is "Students who live further from school arrive later." He plans to record each distance as near or far. Suggest a better way, with a reason.

Hint Which gives more detail: a word or a measurement?

B6 Lena's hypothesis is "Larger dogs eat more food each day." [2 marks]
She plans to record each dog's size as small, medium or large. Suggest a better way, with a reason.

C Practice

C1 Is a person's age in completed years discrete or continuous? [2 marks]
Give a reason.

C2 Shoe sizes go 5, 5½, 6, 6½, and so on. Are shoe sizes discrete or continuous? Give a reason. [2 marks]

C3 A teacher records eye colours. Which is the only average she can find? Why? [2 marks]

C4 Which is bivariate data? [1 mark]
A the times of 30 runners
B the height and mass of each of 30 dogs
C the eye colours of 30 students

C5 Seven music exam results are Merit, Pass, Distinction, Merit, Pass, Merit, Distinction. Find the median result. [2 marks]

C6 Kai takes the goals scored by his school team from a forum where anyone can post. Give one reason why the data may not be reliable. [1 mark]

Answer

Answer

D Exam-style questions

D1 The players in a squad wear numbers 1 to 25. Lewis says, "Squad numbers are quantitative data, so I can work out the mean squad number." [2 marks]

Is Lewis right? Give a reason.

D2 A vet records the mass and the number of visits this year of each of 40 dogs. The table shows the visits.

Visits this year	1	2	3	4	5
Number of dogs	9	14	8	5	4

(a) Work out the mean number of visits. [2 marks]

Answer

(b) The vet thinks heavier dogs visit more often. Explain why she needs bivariate data to test this. [2 marks]

Total for D2: 4 marks

D3 Nadia's hypothesis is "People who drive further to work spend more on fuel." Her plan:

- 1. Ask the 10 people in her office.
- 2. Record each journey as short, medium or long.
- 3. Record fuel spending as "a little" or "a lot".

Assess Nadia's plan.

E Extension

No route is given. The hints are at the end of the sheet. Use one at a time.

E1 Two hotels each asked 11 guests to score their stay from 1 (very poor) to 5 (excellent). The manager says, "The mean score is the same for both hotels, so the guests liked them equally." Comment on the manager's conclusion. Show your working. [4 marks]

Score	1	2	3	4	5
North	0	6	0	0	5
South	0	3	1	7	0

Extension hints

Cover these with paper. Uncover one at a time.

- E1**
- Hint 1** Work out the mean score for each hotel.
- Hint 2** Both totals are 37, so both means are $37 \div 11 = 3.36$. Now find the median for each hotel: the 6th score.
- Hint 3** North's median is 2 and South's is 4. The scores are ordinal: is the gap from 2 to 5 known to be three equal steps?

How did it go?

Colour one circle on each line: not yet, nearly, yes.

I can name data as qualitative, discrete, continuous, categorical or ordinal. ☐ ☐ ☐

I can say whether data is primary, secondary or bivariate, with a reason. ☐ ☐ ☐

I can choose the right type of data and average for a question. ☐ ☐ ☐