WALT understand the difference between numerical (Quantitative) and categorical data and continues variable

Success Criteria I can Understand the difference between

1. **A score of the test, Getting to school, Colour of eyes, Continent of birth**
2. **Rainfall, Number of people in a household,**
3. **Weight of babies, Heights of year 9 students**

Explanation of recognising variables

Complete the exercise followed by the explanation of different variables

Classify these variables as categorical, discrete numerical or continuous numerical.

a   The gender of children in a family
b   The heights of Year 8 students
c   The number of heads when two coins are tossed
d   The rating scale for the responses to a questionnaire given as 1 = dislike, 2 = neutral, 3 = like
e   The energy ratings of refrigerators given a 1-star, 2-star or 3-star ratings

a   Gender can be sorted into the categories male or female. It is a categorical variable.
b   Height is the result of measuring. It is a continuous numerical variable.
c   The number of heads when two coins are tossed is the result of counting. It is a discrete numerical variable.
d   Even though the ratings on the scale are numbers, they are the categories into which the responses can be sorted. It is a categorical variable.
e   Each rating is a description of the efficiency of the refrigerator or names the categories into which the efficiency can be sorted. Energy rating is a categorical variable.

1   Classify each variable as categorical, discrete numerical or continuous numerical.
a   number of family pets
b   types of family pets
c   age
d   number of marks on a test
e   amount of rain in a day
f   number of accidents at an intersection
g   sizes of apples (small, medium or large)
h   hair colour
i   favourite TV show
j   responses to a survey question (1 strongly disagree, 2 disagree, 3 don't know, 4 agree, 5 strongly agree)
k   number of diners in a restaurant
l   fuel consumption
m   amount of money in a purse
n   health of patients after being given medicine (worse, the same, better)
o   temperature during the day
p   length of a line interval
q   opinions of students of the food at the canteen
r   time spent doing homework
s   quality of service at a bank (poor, average, good)

2   Give a further three examples of:
a   categorical variables   b   discrete numerical variables   c   continuous numerical variables.

Would a census, sample or observation be used to collect data on:

a the life of batteries?

b the most popular brand of toothpaste?

c the causes of road accidents in New South Wales?

d the direction of travel of vehicles through an intersection?

a Sample: If every battery produced was tested there would not be any left for sale.

b Sample: It would be impractical to interview everyone.

c Census: Information about every accident would need to be analysed.

d Observation.

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1 What or who would be the target population if we wanted to collect information about:

  a the most popular make of new cars?

  b changes to the school uniform?

  c the price of houses?

  d the success of a new treatment for ticks and fleas on dogs?

  e the suitability of a new bus timetable on a particular route?

2 Would a census, sample or observation be used to collect data on:

  a the number of goals scored each week by a netball team?

  b the average number of children in an Australian family?

  c the number of vehicles crossing an intersection?

  d the sports played by Year 8 students?

  e the number of matches in a box?

  f the native animals living in an area?

  g the most popular TV show in Australia?

  h the heights of 15-year-old males?

  i the method of travel to school by all students?

  j the amount of rubbish littering a street?

  k the suitability of a train timetable?

  l the income of Australians?

  m the outcomes of rolling a die?

3 Give a further three examples of data that could be collected by using:

  a a census   b a sample   c observation.

Check your answers

1 a Discrete numerical   **b** Categorical
c Continuous numerical   **d** Discrete numerical
e Continuous numerical   **f** Discrete numerical
g Categorical   **h** Categorical
i Categorical   **j** Categorical
k Discrete numerical   **l** Continuous numerical
m Discrete numerical   **n** Categorical
o Continuous numerical   **p** Continuous numerical
q Categorical   **r** Continuous numerical
s Categorical

Exercise 9B

1 a All new cars   **b** All students in the school
c All houses sold   **d** All the dogs treated
e All the people who use the bus route
2 a Census   **b** Census or sample
c Observation   **d** Census
e Sample   **f** Observation
g Sample   **h** Sample
i Census   **j** Observation
k Sample   **l** Census or sample
m Observation

Table 4 shows the top 15 countries of birth of Australian residents in 2006 and 2010 (excluding Australian born).

Table 4: Country of birth of Australian residents

Country of birth	Estimated population 2006	Estimated population 2010
United Kingdom	1 153 000	1 193 000
New Zealand	477 000	544 000
China	203 000	380 000
India	154 000	341 000
Italy	220 000	216 000
Vietnam	180 000	211 000
Philippines	136 000	177 000
South Africa	119 000	156 000
Malaysia	104 000	136 000
Germany	115 000	129 000
Greece	126 000	127 000
South Korea	49 000	100 000
Sri Lanka	71 000	92 000
Lebanon	87 000	90 000
Hong Kong	76 000	90 000