18. HANDLING DATA

TEACHING TASK

CONCEPTUAL UNDERSTANDING QUESTIONS (CUQ's)

Multiple Choice Questions

1. If a line graph shows that a student's test scores improved from 65% to 85% over the course of 4 months, what type of data is being represented?
   A) Qualitative data B) Time series data
   C) Continuous data D) Categorical data

Key: B

Explanation: Data collected over time (months) is called time series data.

2. Which of the following would be the best type of graph to show how much time students spend on various activities during recess?
   A) Line graph B) Circle graph
   C) Tally marks D) Bar graph

Key: D

Explanation: Bar graphs are best for comparing different categories, such as activities.

3. A line graph shows that the temperature rose by 5°C each day. If the temperature on Monday was 20°C, what was the temperature on Thursday?
   A) 25°C B) 30°C C) 35°C D) 40°C

Key: C

Explanation: Monday to Thursday is 3 days $\rightarrow$ 3 × 5°C = 15°C increase; 20°C + 15°C = 35°C.

4. You are using a circle graph to represent the number of books read by 100 students. If 50% of students read fiction, 30% read non-fiction, and the remaining students read comics, what percentage of students read comics?
   A) 10% B) 20% C) 30% D) 40%

Key: B

Explanation: Total = 100% $\rightarrow$ 100% - (50% + 30%) = 20% for comics.

5. What would be the most appropriate use of tally marks in real life?
   A) Tracking how much money you spend each month
   B) Recording the number of books a class reads
   C) Showing trends in temperature over the year
   D) Comparing student performance on different subjects

Key: B

Explanation: Tally marks are simple and effective for counting discrete items like books.

ADVANCED LEVEL

More than One Answer Type

6. Which of the following are advantages of using a circle graph (pie chart)?
   A) It shows parts of a whole.
   B) It is easy to compare different categories at a glance.
   C) It works well for continuous data.
   D) It is ideal for showing a large number of categories.

Key: A, B

Explanation: Circle graphs display proportions of a whole (A) and allow quick visual comparisons (B).

7. How are tally marks grouped?
   A) In sets of four vertical lines.
   B) In groups of five, with the fifth line drawn diagonally.
   C) In sets of ten vertical lines.
   D) Each group represents one item or event.

Key: B

Explanation: Tally marks are grouped in fives, with the fifth mark drawn diagonally across the first four.

8. Which of the following are true about line graphs?
   A) Line graphs are used to show changes over time.
   B) The x-axis on a line graph usually shows categories, not time.
   C) Data points are connected with lines to show trends.
   D) Line graphs are best for showing relationships between different categories.

Key: A, C

Explanation: Line graphs show trends over time (A) by connecting data points (C).

Fill In the Blanks

9. The key of a map helps you understand the meaning of the ___, colors, and lines used on the map.

Key: symbols

Explanation: The map key explains symbols, colors, and lines so you can interpret the map's information.

10. On most maps, North (N) is usually located at the ___ of the map.

Key: top

Explanation: By convention, north is placed at the top of most maps to provide a consistent orientation.

11. To follow directions on a map, you might need to turn left, right, or move

straight ahead, based on the ___ given.

Key: directions

Explanation: Following a route on a map requires using given directions (like left, right, straight) to navigate correctly.

Matching Type

12. **Questions**
    1. A map scale of 1:100,000 means that 1 cm on the map equals how many centimeters in real life?
    2. The symbol for a bus station on a tourist map is usually shown as a?
    3. A map with a scale of 1:10,000 would show more or less detail than a map with a scale of 1:100,000?
    4. If a map has a scale of 1:50,000, and the distance between two cities on the map is 6 cm, what is the real-life distance between the cities in kilometers?
    5. What do cardinal directions on a map indicate?
    6. If a map shows parks and gardens using green shading, what type of map information does this represent?

    Answers

    A. The directions (north, south, east, west) to help navigate
    B. Key (or legend)
    C. 3 km
    D. 600,000 cm
    E. A blue circle
    F. More detail

Key: 1-D, 2 -E, 3 -F, 4 -C, 5 -A, 6 -B

Answer the Following Questions

13. A circle graph shows how 100 students voted for their favorite hobbies: 40% like swimming, 25% like reading, 15% like painting, 10% like cycling.
    What percentage of students like other hobbies?

Key: 10%

Explanation: Total = 40% + 25% + 15% + 10% = 90%. Other hobbies = 100% – 90% = 10%.

14. You have the following tally marks for the number of hours students study per week: 4 students study for 3 hours: |||, 7 students study for 5 hours: |||||, 5 students study for 8 hours: |||||, 6 students study for 10 hours: ||||||,
    How many students study for 5 or more hours?

Key: 18

Explanation: Students study =5 hours: 5 hours (7) + 8 hours (5) + 10 hours (6) = 18 students.

15. The following table shows the monthly sales of a store:
    January: 200 units, February: 220 units, March: 250 units, April: 230 units,

May: 280 units,

What trend can be observed from the line graph that represents this data?

Key: Sales generally increased from January to May (upward trend).

Explanation: Monthly units: 200 → 220 → 250 → 230 → 280; overall trend is upward despite a small dip in April.

LEARNERS TASK

CONCEPTUAL UNDERSTANDING QUESTIONS (CUQ's)

Multiple Choice Questions

1. What is the main advantage of using a circle graph (pie chart)?
   A) It shows the relationship between two variables
   B) It is best for showing trends over time
   C) It allows for easy comparison of parts of a whole
   D) It is used to show continuous data

Key: C

Explanation: Circle graphs show proportions, making it easy to compare parts of a whole.

2. If a circle graph shows that 40% of students play soccer, 30% read books, and 30% do other activities, what is the percentage of students who do "other activities"?
   A) 30% B) 40% C) 60% D) 70%

Key: A

Explanation: The graph directly states 30% for other activities.

3. In a tally mark chart, how many total items are represented by the following tally marks:?
   A) 8 B) 9 C) 10 D) 11

Key: B

Explanation: Typical tally marks grouped in fives; total here sums to 9.

4. In a line graph tracking the temperature over a week, if Monday has a temperature of 18°C and Sunday has 30°C, what will the line graph show?
   A) A decrease in temperature over the week
   B) No change in temperature over the week
   C) A steady increase in temperature from Monday to Sunday
   D) An increase in temperature from Monday to Sunday, then a sharp drop on Sunday

Key: C

Explanation: 18°C to 30°C indicates a steady increase across the week.

ADVANCED LEVEL

More than One Answer Type

6. When creating a circle graph (pie chart), which of the following steps are important?
   A) Collect data and find the total for each category.
   B) Calculate the percentage for each category.
   C) Divide the circle into sections based on equal size.
   D) Draw each section based on the calculated percentages.

Key: A, B, D

Explanation: Collect data (A), find percentages (B), and draw sections by percentage (D) are essential; dividing equally (C) is incorrect.

7. Which of the following can be effectively displayed using tally marks?
   A) The total number of items sold in a store.
   B) The temperature changes over a week.
   C) The number of books read by different friends.
   D) The distribution of votes in a survey.

Key: A, C, D

Explanation: Tally marks count discrete items (sales, books, votes), not continuous trends like temperature.

8. Which of the following are true about line graphs?
   A) The y-axis usually represents time.
   B) The x-axis typically represents quantities or measurements.
   C) Line graphs are good for displaying trends or patterns.
   D) Line graphs can be used to compare multiple data sets.

Key: C, D

Explanation: Line graphs show trends/patterns (C) and compare multiple sets (D); x-axis often shows time, not quantities.

Fill In the Blanks

9. A map with a scale of 1:50,000 means that 1 cm on the map represents ___ cm in real life.

Key: 50,000

Explanation: Scale 1:50,000 means 1 cm on the map equals 50,000 cm in real life.

10. When you enlarge a map, the scale factor becomes ___, meaning each unit on the map represents a smaller distance in the real world.

Key: larger

Explanation: Enlarging increases the scale number (e.g., 1:50,000 → 1:25,000), so each map unit covers less real-world distance.

11. When you reduce a map, the scale factor becomes ___, meaning each unit on the map represents a larger distance in real life.

Key: smaller

Explanation: Reducing decreases the scale number (e.g., 1:50,000 → 1:100,000), so each map unit covers more real-world distance.

Matching Type

12. **Questions**
    1. When you reduce a map, the scale factor becomes?
    2. A map scale of 1:500 means that 1 cm on the map represents how many meters in real life?
    3. If the map's bar scale shows 5 cm = 50 km, how far are two cities that are 10 cm apart on the map?
    4. In a map's key, what might a dashed line represent?
    5. What is the purpose of a map key (legend)?
    6. The symbol of a red star on a map is most likely used to represent what?

    Answers

    A. 1 meter
    B. 100 km
    C. Less detail
    D. A walking path
    E. Famous landmarks
    F. A chart that explains symbols, colors, and lines on the map

Key: 1-C,2-A,3-B,4-D,5-F,6-E

Answer the Following Questions

13. A survey of 200 people was conducted to find out their favorite types of fruit. The results were: 60 people like apples, 50 people like bananas, 40 people like oranges, 30 people like grapes, 20 people like other fruits
    What percentage of people prefer bananas?

Key: 25%

Explanation: Total = 200 people. Bananas = 50 people. Percentage = (50 ÷ 200) × 100 = 25%.

14. In a class survey, the following tally marks were recorded for the number of pets owned by students: 3 students have 1 pet: |||, 5 students have 2 pets: |||||, 4 students have 3 pets: ||||, 2 students have 4 pets: ||, 1 student has 5 pets: |
    How many students were surveyed in total?

Key: 15

Explanation: Add all students: 3 + 5 + 4 + 2 + 1 = 15 students surveyed.

15. The number of visitors to a museum was recorded for 5 days: Monday: 50 visitors, Tuesday: 70 visitors, Wednesday: 60 visitors, Thursday: 90 visitors, Friday: 80 visitors
    What was the change in the number of visitors from Monday to Friday?

Key: 30 more visitors

Explanation: Monday = 50, Friday = 80. Change = 80 – 50 = 30 more visitors on Friday.