



S17-30min Pictograms: 30-minute Pack

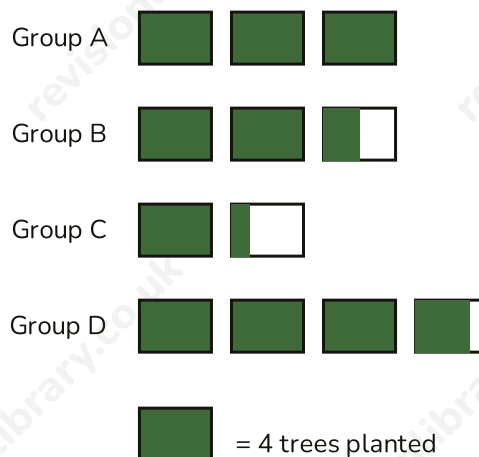
EDEXCEL 1ST0 · Calculator allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

- 1** Four scout groups took part in a tree-planting day. The pictogram shows how many trees each group planted.



- (a) The key states that 1 whole symbol represents 4 trees. Write down how many trees a half symbol represents. (1)

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- (b) Write down the number of trees planted by Group C. (1)

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- (c) Work out the number of trees planted by Group D. (2)

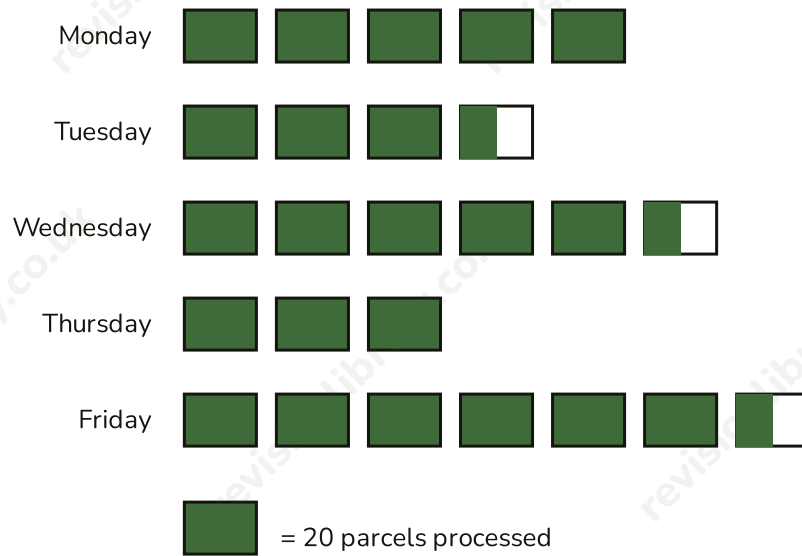
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- (d) Write down which group planted the most trees. (1)

.....

(Total for Question 1 is 5 marks)

- 2** The pictogram shows the number of overseas parcels processed by a post office on each of five weekdays.



- (a)** Write down the number of parcels processed on Thursday. **(1)**

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- (b)** Work out the difference between the number of parcels processed on Friday and on Tuesday. **(2)**

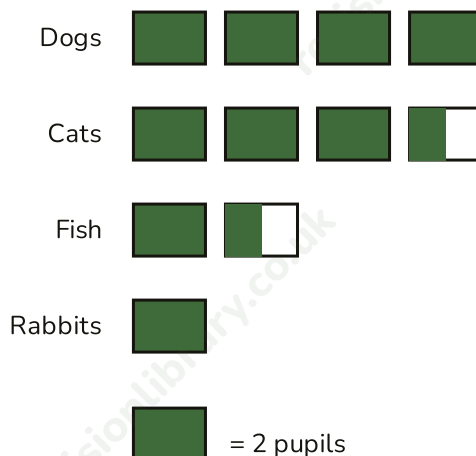
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- (c)** Work out the difference between the busiest day and the quietest day shown on the pictogram. **(2)**

.....

(Total for Question 2 is 5 marks)

- 3** Pupils in a Year 8 class were each asked which type of pet they own (each pupil owns exactly one pet). The results are shown in the pictogram.



- (a)** Which pet type was owned by the fewest pupils? (1)

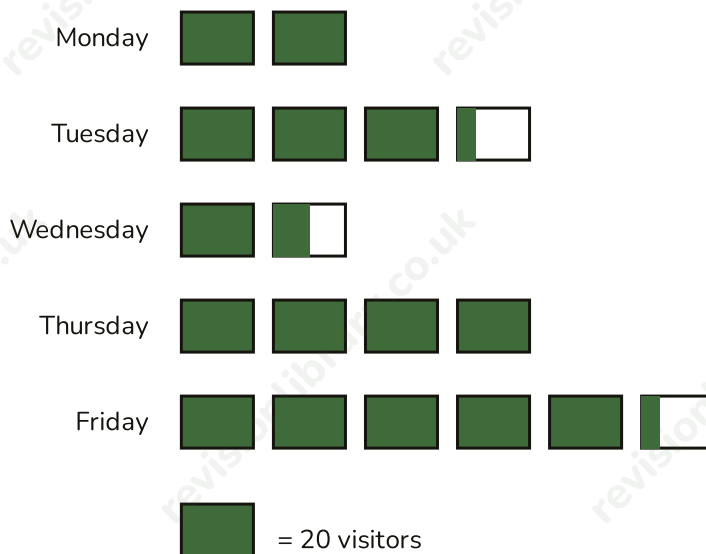
- ☐ A) Dogs
- ☐ B) Cats
- ☐ C) Fish
- ☐ D) Rabbits

- (b)** Work out how many more pupils own a dog than own a rabbit. (2)

- (c)** Work out the total number of pupils surveyed. (2)

(Total for Question 3 is 5 marks)

- 4 A museum recorded the number of visitors to its dinosaur exhibit each day for one week. The pictogram shows the results for Monday to Friday.



- (a) Work out the total number of visitors to the exhibit over the five days shown. (2)

- (b) Work out the range of the number of daily visitors shown on the pictogram. (2)

- (c) Write down the day on which the exhibit had the most visitors. (1)

(Total for Question 4 is 5 marks)

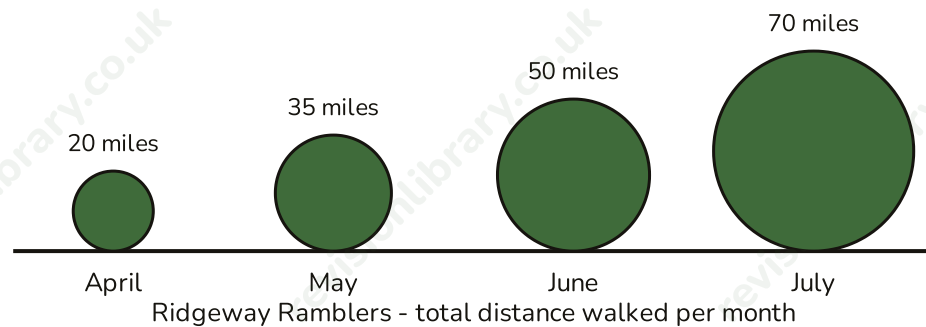
- 5** Four cricket players' scores in one match were recorded.

Player	Runs scored
Zara	27
Yusuf	18
Priya	9
Omar	36

- (a) State a suitable key for a pictogram of this data, so that every player's score can be shown using only whole, half, quarter or three-quarter symbols. Give a reason for your choice. (2)
- (b) Using a key of 12 runs per symbol, write down the number of symbols needed to show Priya's score of 9 runs. (1)
- (c) Explain one disadvantage of choosing a key value that is too large for a small data set like this one. (1)

(Total for Question 5 is 4 marks)

- 6** The Ridgeway Ramblers walking club wants to show the total distance walked by its members each month. Instead of using a key and repeating a fixed-size symbol, a member drew a single circle for each month, making the circle bigger as the distance increased. The diagram is shown below (with the correct distance for each month labelled).



- (a) Explain why varying the SIZE of a single symbol, instead of using a fixed-size symbol with a key, is a misleading way to represent this data. (2)
- (b) Suggest a more appropriate way to redraw this pictogram. (2)
- (c) Give one reason why a pictogram would not be a suitable choice to display continuous data with many decimal values, such as daily rainfall in mm measured to 1 decimal place. (2)

(Total for Question 6 is 6 marks)

Mark scheme · S17-30min Pictograms: 30-minute Pack

Question 1

- (a) **B1** 2 cao
- (a) **Answer: 2**
- (b) **B1** 5 cao
- (b) **Answer: 5**
- (c) **M1** $3 \times 4 + 3$, oe (3 whole symbols plus a three-quarter symbol)
- (c) **A1** 15 cao
- (c) **Answer: 15**
- (d) **B1** Group D cao
- (d) **Answer: Group D**

Question 2

- (a) **B1** 60 cao
- (a) **Answer: 60**
- (b) **M1** $130 - 70$, oe
- (b) **A1** 60 cao
- (b) **Answer: 60**
- (c) **M1** $130 - 60$, oe (Friday, the highest, minus Thursday, the lowest)
- (c) **A1** 70 cao
- (c) **Answer: 70**

Question 3

- (a) **B1** D cao
- (a) **Answer: D) Rabbits**
- (b) **M1** $8 - 2$, oe
- (b) **A1** 6 cao
- (b) **Answer: 6**
- (c) **M1** $8 + 7 + 3 + 2$, oe
- (c) **A1** 20 cao
- (c) **Answer: 20**

Question 4

- (a) **M1** $40 + 65 + 30 + 80 + 105$, oe
- (a) **A1** 320 cao
- (a) **Answer: 320**
- (b) **M1** $105 - 30$, oe (highest minus lowest)
- (b) **A1** 75 cao
- (b) **Answer: 75**
- (c) **B1** Friday cao
- (c) **Answer: Friday**

Question 5

- (a) **B1** a valid key stated, e.g. 1 symbol = 12 runs (or 9, or 18, or any value for which all four scores give a whole, half, quarter or three-quarter symbol) oe
- (a) **B1** reason given, e.g. so that no score needs an awkward partial symbol that is hard to draw or read oe
- (a) **Answer: 1 symbol = 12 runs, because this gives Zara 2.25 symbols, Yusuf 1.5 symbols, Priya 0.75 symbols and Omar 3 symbols - every score can be shown using a whole, half or quarter symbol, with no awkward partial symbols.**
- (b) **B1** three-quarter symbol (0.75 of a symbol) cao
- (b) **Answer: Three-quarter symbol**
- (c) **B1** e.g. if the key is too large, small scores may be shown as only a tiny sliver of a symbol, which is hard to draw accurately and hard for the reader to interpret precisely oe
- (c) **Answer: If the key value is too large, a small score may need only a very small partial symbol, which is difficult to draw accurately and difficult for the reader to interpret precisely.**

Question 6

- (a) **B1** the reader tends to compare the area (or visual size) of the symbols, not just their labelled values oe
- (a) **B1** this exaggerates the difference between months: e.g. the July circle looks far more than 3.5 times the size of the April circle, even though 70 miles is only 3.5 times 20 miles oe
- (a) **Answer: It is misleading because the reader's eye compares the area of the circles rather than reading exact values from a key, so the visual difference between months looks much larger than the true difference between the distances.**
- (b) **B1** use a symbol of the same fixed size throughout oe
- (b) **B1** choose a suitable key and repeat (whole/half/quarter) copies of that same-size symbol to represent each month's distance oe
- (b) **Answer: Use the same size of symbol for every month, choose a sensible key (for example 1 symbol = 10 miles), and show each month's distance by repeating that same-size symbol the correct number of times (using half or quarter symbols where needed).**
- (c) **B1** a pictogram can only show simple partial symbols (such as whole, half or quarter symbols) clearly oe
- (c) **B1** so data with many decimal places would need oddly-shaped, ambiguous partial symbols that are hard to draw and hard to read accurately oe
- (c) **Answer: A pictogram can only clearly show simple fractions of a symbol (whole, half, quarter). Data with many decimal values would need awkward, non-standard partial symbols that are difficult to draw and difficult for a reader to interpret accurately, so a different chart (such as a bar chart) is more suitable.**