



EP.M133 Logic Grids and Deduction Puzzles Set F

GL ASSESSMENT GL-11PLUS-MATHS · Calculators not allowed · about 50 minutes

Total Marks

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

- 1** Four friends each bought a different cake from the school fete: chocolate, lemon, victoria sponge and carrot cake. Amelia bought the chocolate cake. Yusuf did not buy the lemon cake. Priya bought the victoria sponge. Callum bought the only cake left. Work out which cake each person bought.

(Total for Question 1 is 2 marks)

- 2** In a 100-m race four pupils finished in a certain order. Kwame finished immediately after Erin. Oliwia finished second. Noah did not finish last. Using the clues, state who finished third.

(Total for Question 2 is 2 marks)

- 3** Three pupils each bought a different wheeled toy. The scooter cost £60, the bicycle cost £40 and the remaining toy cost £85. Noah did not buy the skateboard. Priya paid £85. Noah paid more than the remaining pupil. Work out which toy each pupil bought and the price they paid.

(Total for Question 3 is 3 marks)

- 4 Four pupils - Amelia, Yusuf, Callum and Erin - are in different school years and each likes a different sport: football, hockey, tennis and swimming. The pupil in Year7 does not like tennis. Callum is one year older than the pupil who likes football. Amelia is in Year5. Yusuf likes tennis. The Year5 pupil likes swimming. Work out who likes hockey.

(Total for Question 4 is 3 marks)

- 5 At lunchtime four pupils - Amelia, Yusuf, Priya and Callum - each ordered a different sandwich and a different drink. Clues: the person who drank orange juice did not have ham; Yusuf had the cheese sandwich and did not drink tea; Callum drank water and did not have egg; the person who had the egg drank tea; the person who drank milk had the ham; Priya drank tea. Who had the ham and who drank the orange juice?

(Total for Question 5 is 3 marks)

- 6 Four pupils, Amelia, Yusuf, Priya and Noah, bought small items at the school shop. Prices available were £0.50, £0.75, £1.20 and £1.50. The pencil cost £0.50. The item bought at the Stationers cost twice as much as the ruler. Priya bought the sharpener. Noah did not buy the pencil; he paid £1.50. Which pupil paid £1.20?

(Total for Question 6 is 3 marks)

- 7 At the school book fair four pupils each bought a different book: a mystery, a fantasy, a biography and a comic. Prices were £3.00, £4.50, £6.00 and £7.50. The comic cost £3.00. The biography cost £3.00 more than the mystery. Yusuf bought the comic. Noah bought a book costing £7.50. Priya did not buy the fantasy. Which book did Amelia buy?

(Total for Question 7 is 3 marks)

- 8** Four pupils each timed how long they took to finish their maths homework. Times were 20, 25, 30 and 35 minutes. Yusuf finished second-from-left in a row of four pupils. Amelia sat at the far left. Noah took 35 minutes. Priya took longer than Yusuf but less time than Amelia. Which pupil took 25 minutes?

(Total for Question 8 is 3 marks)

- 9** Four pupils - Amelia, Yusuf, Priya and Noah - sat in a row from left to right and each ate a different fruit: an apple, a banana, a cherry and a date. Clues: Amelia sat at the far left. Yusuf sat second from the left. The apple was eaten by the pupil at the far left. Priya sat immediately to the right of the person who ate the cherry. Priya sat immediately to the right of Noah. Noah did not eat the banana. Priya did not eat the banana. Who ate the banana?

(Total for Question 9 is 4 marks)

- 10** Four pupils - Amelia, Yusuf, Priya and Callum - joined different after-school clubs: chess, drama, swimming and coding. Each club is held on a different weekday Monday to Thursday. Clues: The chess club is on Monday. The pupil who joined coding attends on the day immediately after the drama club. Priya joined a club on Wednesday. Callum does not attend on Tuesday and did not join chess. Yusuf joined the drama club. Which club does Callum attend and on which day?

(Total for Question 10 is 5 marks)

Mark scheme · EP.M133 Logic Grids and Deduction Puzzles Set F

Question 1

- **M1** Use given facts to place Amelia = chocolate and Priya = victoria and eliminate those options oe
- **A1** All four identified correctly: Amelia - chocolate, Yusuf - carrot, Priya - victoria, Callum - lemon cao
- **Answer: Amelia - chocolate; Yusuf - carrot; Priya - victoria; Callum - lemon cake (the remaining cake). (Yusuf cannot be lemon so he must be carrot; Callum is the remaining buyer.)**

Question 2

- **M1** Place Oliwia = 2 and use Kwame immediately after Erin with Noah not last to deduce Erin = 3 and Kwame = 4 oe
- **A1** Third place is Erin cao
- **Answer: Erin finished third. (One valid full order: Noah 1st, Oliwia 2nd, Erin 3rd, Kwame 4th.)**

Question 3

- **M1** Use prices to assign unique prices and place Priya at £85 (so Priya has the remaining toy) oe
- **M1** Use Noah paid more than the remaining pupil to assign scooter or bicycle; with uniqueness deduce Noah = scooter £60 and remaining pupil = bicycle £40
- **A1** All three correct: Priya - skateboard £85; Noah - scooter £60; remaining pupil - bicycle £40 cao
- **Answer: Priya bought the skateboard for £85; Noah bought the scooter for £60; the remaining pupil bought the bicycle for £40.**

Question 4

- **M1** From Amelia = Year5 and Year5 likes swimming place Amelia - swimming oe
- **M1** With Yusuf = tennis and Year7 not tennis deduce which year can be Year7 for footballer and use Callum one year older to place Callum and footballer oe
- **A1** Callum likes hockey cao
- **Answer: Callum likes hockey. (One consistent assignment: Amelia Year5 - swimming; Erin Year7 - football; Callum Year8 - hockey; Yusuf - tennis.)**

Question 5

- **M1** Place Yusuf = cheese and not tea so Yusuf not egg; use Callum = water so not egg; egg is with tea so that person is not Callum oe
- **M1** Milk-drinker has ham; use Priya drank tea (so Priya has the egg) to place Amelia with milk and ham by elimination oe
- **A1** Answers: ham = Amelia, orange juice = Yusuf cao
- **Answer: Ham was eaten by Amelia. The orange juice was drunk by Yusuf.**

Question 6

- **M1** Stationers must cost £1.50 and ruler £0.75 since those are the only pair where one price is twice the other (pencil is £0.50) oe
- **M1** Noah paid £1.50 so he bought the Stationers item; Priya bought the sharpener so she did not buy the pencil
- **A1** Therefore Priya paid £1.20 (sharpener = £1.20) cao
- **Answer: Priya paid £1.20 for the sharpener. (Stationers item £1.50 = Noah; ruler £0.75; pencil £0.50; remaining price £1.20 is Priya's.)**

Question 7

- **M1** From comic = £3 and biography = mystery + £3 deduce the only compatible pair is mystery £4.50 and biography £7.50 (since mystery £3 would clash with comic) oe
- **M1** Noah paid £7.50 so Noah = biography; Yusuf = comic from clue, leaving mystery £4.50 and fantasy £6.00 for Priya and Amelia
- **A1** Priya did not buy the fantasy so Amelia bought the fantasy cao
- **Answer: Amelia bought the fantasy book (Yusuf - comic £3.00; mystery £4.50 - Priya; biography £7.50 - Noah; fantasy £6.00 - Amelia).**

Question 8

- **M1** Place Amelia = far left = 20/25/30/35 unknown and Noah = 35; Yusuf = second-from-left
- **M1** Order Priya > Yusuf and Priya < Amelia so with Yusuf second this forces Yusuf = 20, Priya = 25, Amelia = 30 oe
- **A1** Therefore Priya took 25 minutes cao
- **Answer: Priya took 25 minutes. (Arrangement left to right: Amelia 30, Yusuf 20, Noah 35, Priya 25 in the logical ordering that fits the clues.)**

Question 9

- **M1** Place Amelia at far left with the apple and Yusuf second from left seen
- **M1** From Priya immediately right of Noah, and only seats 3 and 4 left, deduce Noah is third and Priya is fourth oe
- **M1** From Priya immediately right of the cherry eater deduce Noah (seat 3) ate the cherry; then Priya did not eat the banana fixes Priya with the date, leaving banana and date correctly split
- **A1** Therefore Yusuf (second from left) ate the banana cao
- **Answer: Yusuf ate the banana. (Left to right: Amelia - apple; Yusuf - banana; Noah - cherry; Priya - date.)**

Question 10

- **M1** Place chess = Monday from the clue cao
- **M1** Yusuf = drama; drama cannot be Monday (chess) or Wednesday (Priya) and cannot be Thursday because coding must be the next day, so drama must be Tuesday oe
- **M1** Coding must be the day after drama, so coding = Wednesday and therefore Priya = coding cao
- **M1** Remaining day for Callum is Thursday (Callum not Tuesday and chess is Monday) so Callum attends on Thursday
- **A1** Therefore Callum attends the swimming club on Thursday cao
- **Answer: Callum attends the swimming club on Thursday. (Chess Monday; Drama Tuesday = Yusuf; Coding Wednesday = Priya; Swimming Thursday = Callum.)**