Maths Mock Test Paper 26 Answers

Q#	Answer	Explanation
1	D	A quarter turn (90°) clockwise from north leaves the robot facing east. A half turn (180°) always faces the opposite way, and the opposite of east is west.
2	A	6 × 8 = 48, 4 × 12 = 48, 3 × 16 = 48 and 2 × 24 = 48. Only 5 × 9 is different, because 5 × 9 = 45.
3	B	From 17:00 to 17:30 is 30 minutes, so the News lasts 30 minutes. From 17:30 to 18:05 is 35 minutes, so the Quiz is the one. The Cartoons run from 18:05 to 18:30, the Weather from 18:30 to 18:40 and the Film from 18:40 to 20:15, and none of those is 35 minutes.
4	C	Count on in two jumps. The first 4 miles take it to the next thousand: 29,996 + 4 = 30,000. That leaves 7 − 4 = 3 more miles, and 30,000 + 3 = 30,003. Every digit but the last changes as the reading passes 30,000.
5	E	The heights are not all in the same unit, so change Ana's height to centimetres first. 1 m is 100 cm, so 1.42 m is 142 cm. Ben is 128 cm, and 142 − 128 = 14, so Ana is 14 cm taller.
6	C	On Monday the café sold 6 cakes, and twice that is 6 × 2 = 12. The Wednesday bar reaches 12. Friday's bar, at 3, is half of Monday's rather than double.
7	A	14 is not a multiple of 5, so the bottom row is right, but 14 is even, so it belongs in the Even column rather than the Odd one. Every other number is in the right box: 10 and 20 are even multiples of 5, 15 and 35 are odd multiples of 5, 8 and 12 are even but not multiples of 5, and 7 and 21 are odd and not multiples of 5.
8	C	A quarter of 20 is 20 ÷ 4 = 5 marbles, and a fifth of 20 is 20 ÷ 5 = 4 marbles. She gives away 5 + 4 = 9 marbles, so she keeps 20 − 9 = 11. Both fractions are fractions of the whole 20.
9	E	Swapping the numbers gives (3, 5), which means 3 across and 5 up. That is point E. Point A is at (5, 3), where she should have plotted it.

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10	B	Hull was −2°C. Going 3 degrees colder means counting 3 steps down from −2, which gives −3, −4 and then −5. York was −5°C. Leeds, at 1°C, is 3 degrees warmer than Hull, not colder.
11	A	The book takes 180 ÷ 12 = 15 school days. There are 5 school days in a week, so that is 3 whole weeks of Monday to Friday. The first week ends on Friday 7 June, the second on Friday 14 June and the third on Friday 21 June. Counting 15 days straight on, weekends included, gives the wrong answer of Monday 17 June.
12	E	Opposite angles of a rhombus are equal, so there are two angles of 64°. The four angles of any quadrilateral add up to 360°, so the other two share 360 − 128 = 232°, making each 232 ÷ 2 = 116°. Next-door angles of a rhombus add up to 180°, and 64 + 116 = 180 confirms it.
13	D	Three quarters of 60 is 45. 75% and 0.75 are both three quarters, and 60 ÷ 4 × 3 = 45 and 3 × 60 ÷ 4 = 45 find a quarter and take three of them in either order. But 60 ÷ 3 × 4 = 80 finds a third and takes four of them, which is four thirds.
14	D	In the top-left quadrant a point is to the left of the y-axis, so a is negative, and above the x-axis, so b is positive. The point (b, a) has a positive x-coordinate, so it is to the right, and a negative y-coordinate, so it is below. That is the bottom-right quadrant.
15	B	When n is 2, 2n is 2 × 2 = 4 and n + 2 is 2 + 2 = 4. They are equal, so 2n is not bigger and Amir is wrong. For each of the other values 2n is bigger: 6 against 5, 8 against 6, 10 against 7 and 20 against 12.
16	D	To the nearest 10 the ones digit decides: 3,596 has a 6, so it rounds up to 3,600. To the nearest 100 the tens digit decides: 3,596 has a 9, so it also rounds up to 3,600. The others give two different answers: 1,247 gives 1,250 and 1,200, 2,048 gives 2,050 and 2,000, 4,351 gives 4,350 and 4,400, and 5,555 gives 5,560 and 5,600.
17	B	In 4,807 the 8 is worth 800 and the 0 is in the tens. In 4,087 the 0 is in the hundreds and the 8 is worth only 80. The gap between the two is 4807 − 4087 = 720, so she must add 720. Adding 700 would only fix the hundreds digit and give 4,787.

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18	E	A ratio stays the same when both parts are **multiplied** by the same number. 2 × 3 = 6 and 7 × 3 = 21, so 6 : 21 is the same as 2 : 7. Adding the same amount to both parts, as in 5 : 10 or 3 : 8, changes the ratio, and 7 : 2 has the drinks the wrong way round.
19	A	The square numbers near 150 are 144 and 169. 144 is smaller than 150, so the next square is 169, and 169 − 150 = 19. Adding 46 also makes a square, since 150 + 46 = 196, but 19 is smaller.
20	C	2.4 kg is 2400 g. The first 1000 g costs £3, leaving 2400 − 1000 = 1400 g. That is 1400 ÷ 200 = 7 lots of 200 g, costing 7 × 80 = 560p, which is £5.60. The total is £3 + £5.60 = £8.60.
21	B	Compare them in metres per second. The dog goes 12 ÷ 2 = 6, the bike 300 ÷ 60 = 5, the horse 35 ÷ 5 = 7, the car 1000 ÷ 240, which is just over 4, and the boy 100 ÷ 25 = 4. The horse is the fastest at 7 metres every second.
22	A	From 10:40 to 13:05 is 2 hours 25 minutes. That is more than 2 hours but not more than 4 hours, so Kim pays the £4.50 charge. The charges are not added together: only one line of the table applies.
23	E	The rectangle is 3 squares long and 2 squares wide, so its perimeter is 3 + 2 + 3 + 2 = 10 sides of a square. 10 sides make 50 cm, so one side is 50 ÷ 10 = 5 cm. The rectangle measures 15 cm by 10 cm, and 15 × 10 = 150 cm².
24	C	44 is 4 × 11, and 25 × 4 = 100, so 25 × 44 is the same as 100 × 11, which is 1,100. The others do not match: 25 × 40 + 4 = 1004, 20 × 44 + 5 = 885, 50 × 88 = 4400 because both numbers have been doubled, and 5 × 5 × 4 × 4 = 400.
25	D	The museum takes up half of the pie, which is 20 votes, and the zoo is a quarter, which is 10 votes. That leaves 40 − 20 − 10 = 10 votes, shared equally between the beach and the park, so each got 10 ÷ 2 = 5 votes.
26	E	Try 2: 2 × 4 = 8 and 8 − 6 = 2, so 2 comes out unchanged. As an equation, 4n − 6 = n, so 3n = 6 and n = 2. Putting in 3 gives 3 × 4 − 6 = 6, and putting in 6 gives 6 × 4 − 6 = 18.

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27	B	A box works out at 20p an egg, so buy as many boxes as fit into 30 without going over: 2 boxes give 24 eggs for £4.80. The last 30 − 24 = 6 eggs cost 6 × 25 = 150p, which is £1.50, so the total is £4.80 + £1.50 = £6.30. Three boxes would cost £7.20 and 30 single eggs £7.50.
28	A	Tom looks at the tens digit, 5, and rounds 2,451 up to 2,500. His hundreds digit is now 5, so 2,500 rounds up to 3,000. Amy looks at the hundreds digit of 2,451, which is 4, so she rounds down to 2,000. The difference is 3000 − 2000 = 1000. Rounding in two steps can give the wrong answer.
29	C	The square's side is 6 cm, since 6 × 6 = 36. Its perimeter is 4 × 6 = 24 cm. The triangle has three equal sides making 24 cm, so each side is 24 ÷ 3 = 8 cm.
30	D	Check 3 km. At 5 km/h it takes 3 ÷ 5 = 0.6 hours, which is 36 minutes. At 6 km/h it takes 3 ÷ 6 = 0.5 hours, which is 30 minutes. The difference is 36 − 30 = 6 minutes, as it should be. 1.5 km would give only half the difference, 3 minutes.
31	C	The angles around a point add up to 360°. Each angle of a regular hexagon is 120° and each angle of a square is 90°, so the third shape needs an angle of 360 − 120 − 90 = 150°. Its exterior angle is 180 − 150 = 30°, and the exterior angles of a polygon add to 360°, so it has 360 ÷ 30 = 12 sides.
32	A	The 20th term is the first term with 19 steps added on, not 20. For 1, 4, 7, 10, … that is 1 + 19 × 3 = 58. The others give 3 + 19 × 3 = 60, 18 + 19 × 2 = 56, 5 + 19 × 3 = 62 and 2 + 19 × 3 = 59.
33	E	Double the first ratio so that the girls match: 3 : 4 is the same as 6 : 8. So boys, girls and teachers are in the ratio 6 : 8 : 1, which is 6 + 8 + 1 = 15 parts. The total must be a multiple of 15, and 30 is the only one offered, with 12 boys, 16 girls and 2 teachers.
34	B	The middle row holds −5 add 3, which is −2, and 3 + x. The top brick is the sum of those two, so it is 1 more than x, because −2 add 3 is 1. The top brick is 4, so x is 3. Checking: the middle row is −2 and 6, and together they make 4.

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35	D	Each symbol stands for 8 cars, so Monday was 2.5 × 8 = 20, Tuesday 3 × 8 = 24, Wednesday 1.5 × 8 = 12 and Thursday 2 × 8 = 16. A mean of 20 over 5 days means 5 × 20 = 100 cars in total. The four days shown add up to 20 + 24 + 12 + 16 = 72, so Friday had 100 − 72 = 28 cars.
36	E	Two numbers next to each other are both close to the square root of 552. 23 × 23 = 529, so try 23 × 24 = 552, which works. Their sum is 23 + 24 = 47.
37	B	Each side loses 4 cm at both ends, so the base of the box is 20 − 8 = 12 cm long and 15 − 8 = 7 cm wide. The folded sides are 4 cm tall. The volume is 12 × 7 × 4 = 336 cm^3. Taking 4 cm off each side only once gives 16 × 11 × 4 = 704 cm^3.
38	C	The top row is complete: −3 and 2 make −1, and adding 1 gives 0, so every line adds up to 0. The diagonal from top left to bottom right is −3, the blank centre and 3. The −3 and 3 cancel out, so the centre must be 0. The middle row is then 4, 0 and ?, and to make 0 the ? must be −4.
39	A	3 litres of blue would need 3 × 4 = 12 litres of white, but Jo only has 10, so the white runs out first. 10 litres of white needs 10 ÷ 4 = 2.5 litres of blue. That makes 10 + 2.5 = 12.5 litres of pale blue, with 0.5 litres of blue left over.
40	D	The factors of 36 are 1, 2, 3, 4, 6, 9, 12, 18 and 36. The ones in the 3 times table are 3, 6, 9, 12, 18 and 36, which is 6 of them.
41	C	Adding the two facts together gives 2a = 16, so a = 8. Then b = 12 − 8 = 4. So a × b = 8 × 4 = 32.
42	B	AB = AC, so the triangle is isosceles and the angles at B and C are equal. They share 180 − 40 = 140°, so each is 140 ÷ 2 = 70°. BCD is a straight line, so angle ACD is 180 − 70 = 110°.
43	D	The first group has 2 more apples than the second and weighs 390 − 230 = 160 g more, so 2 apples weigh 160 g and one apple weighs 80 g. Then 2 pears weigh 230 − 80 = 150 g, so one pear weighs 75 g.

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44	E	3 weeks is 21 days, and a whole number of weeks lands on the same day of the week, so it is a Tuesday. February has 28 days in a year that is not a leap year, so 2 days take us to 28 February and the other 21 − 2 = 19 days go into March: 19 March. Tuesday 18 March would be right in a leap year.
45	A	Compare each one with a calculation that makes exactly 300. 600 ÷ 2 = 300, and 612 ÷ 1.9 divides a bigger number by a smaller one, so both changes push the answer above 300. 29.8 × 9.9 is less than 30 × 10 and 5.9 × 49.5 is less than 6 × 50, as both numbers have got smaller. 599 ÷ 2.1 divides a smaller number by a bigger one, and 301 × 0.99 is less than 301 × 1, taking off more than 1.
46	B	The steepest part of the graph is the fastest. In the four half hours she covers 8 km, 4 km, 0 km and then 22 − 12 = 10 km. From 10:30 to 11:00 is 30 minutes, and 10 km in half an hour is 10 × 2 = 20 km in an hour, so 20 km/h. Her average over the whole ride is 22 ÷ 2 = 11 km/h, which is a trap.
47	E	The child needs 15 × 24 = 360 mg. Each 5 ml holds 120 mg, and 360 ÷ 120 = 3, so the child needs 3 lots of 5 ml. That is 3 × 5 = 15 ml. The answer 3 ml forgets that each lot is 5 ml, not 1 ml.
48	C	Maths: 25 × 4 = 100 and 18 × 4 = 72, so 18 out of 25 is 72%. Science: 40 × 2.5 = 100 and 34 × 2.5 = 85, so 34 out of 40 is 85%. The science score was 85 − 72 = 13 percent higher. 16 is just the difference in marks, 34 − 18.
49	A	Multiplying both numbers in a division by the same amount does not change the answer. Multiplying 3.6 and 0.04 by 100 turns 3.6 ÷ 0.04 into 360 ÷ 4, and 360 ÷ 4 = 90.
50	D	From one end to the other the line goes 8 across and 4 up, so it rises 1 square for every 2 squares across. Starting at (−3, −1), each 2 steps across and 1 step up lands on a whole-number point: (−1, 0), (1, 1), (3, 2) and then the end, (5, 3). With the start that makes 5 points. At the odd steps between them the line is half-way up a square, so those are not whole-number points.

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