

Decimals

Foundation and Higher tiers

Total marks: 72

Marks

- M** Method mark, for a correct method. It can be implied by a correct answer.
- A** Accuracy mark, for a correct answer. It needs the method mark before it.
- B** A mark for a correct value or statement, with or without working.
- ft** Follow through: the mark is given for using an earlier wrong answer correctly.
- oe** Or equivalent.
- [a, b]** Any value from a to b inclusive.

Questions

Q	Skill	Spec	Tier	Grade	Calculator	Marks
1	Decimals on a number line	N1 N2	Foundation	1	No	2
2	Adding and subtracting decimals	N2	Foundation	2	No	2
3	Ordering decimals	N1 N2	Foundation	2	No	2
4	Multiplying decimals: checking a claim	N2	Foundation	2	No	1
5	Multiplying decimals	N2	Foundation	3	No	3
6	Converting between fractions and decimals	N10	Foundation	3	No	3
7	Dividing by a decimal	N2	Foundation	4	No	2
8	Inverse operations with decimals	N2	Foundation	4	No	2
9	Multiplying and dividing by numbers near 1	N2	Foundation	4	No	1
10	Fraction to recurring decimal	N10	Higher	5	No	2
11	Recurring decimal to fraction: show that	N10	Higher	6	No	3
12	Recurring decimal to fraction: spot the error	N10	Higher	7	No	3
13	Decimal calculation in context	N2	Foundation	2	Yes	2
14	Using a calculator: all the figures	N2 N3	Foundation	2	Yes	2
15	Money calculation with a decimal mass	N2	Foundation	2	Yes	3
16	Adding and subtracting decimals in a table	N2	Foundation	2	Yes	2

Q	Skill	Spec	Tier	Grade	Calculator	Marks
17	Powers and roots on a calculator	N6 N2	Foundation	2	Yes	3
18	Dividing by a decimal in context	N2	Foundation	2	Yes	2
19	Fractions to decimals	N10	Foundation	2	Yes	2
20	Subtracting and dividing decimals	N2	Foundation	2	Yes	2
21	Division with decimals in context	N2	Foundation	3	Yes	3
22	Decimal calculation in context, rounding up	N2 G16	Foundation	3	Yes	4
23	Ordering fractions and decimals	N10 N1	Foundation	3	Yes	2
24	Decimal calculation with a change of units	N2 N13	Foundation	3	Yes	3
25	Division with decimals, rounding down	N2	Foundation	3	Yes	3
26	Decimal calculation and a decision	N2	Foundation	3	Yes	3
27	Decimal calculation in context, rounding up	N2 N13	Foundation	3	Yes	3
28	Shift length and pay from clock times	N13 N2	Foundation	3	Yes	4
29	Decimal calculations in a bill	N2	Foundation	4	Yes	3
	Total					72

Question 1 N1 N2 · Foundation · Grade 1 · 2 marks

Q	Answer	Mark	Comments
1(a)	6.3	B1	
1(b)	arrow halfway between the ticks for 6.8 and 6.9	B1	

Question 2 N2 · Foundation · Grade 2 · 2 marks

Q	Answer	Mark	Comments
2(a)	17.55	B1	
2(b)	5.36	B1	

Question 3 N1 N2 · Foundation · Grade 2 · 2 marks

Q	Answer	Mark	Comments
3	0.06, 0.16, 0.6, 0.605, 0.61	B2	B1 for one number in the wrong place

Question 4 N2 · Foundation · Grade 2 · 1 mark

Q	Answer	Mark	Comments
4	No, with 0.06	B1	oe, such as $3 \times 2 = 6$ and there are two decimal places, or $0.6 \div 0.2 = 3$ not 0.3

Question 5 N2 · Foundation · Grade 3 · 3 marks

Q	Answer	Mark	Comments
5	a complete method for 236×45 , with at most one error	M1	or a grid for 2.36×4.5
	10 620	A1	digits 1062 seen
	10.62	A1	

Question 6 N10 · Foundation · Grade 3 · 3 marks

Q	Answer	Mark	Comments
6(a)	$\frac{9}{20}$	B1	
6(b)	$3 \div 8$ by a written method, or $\frac{375}{1000}$	M1	oe, or $\frac{1}{8} = 0.125$
	0.375	A1	

Question 7 N2 · Foundation · Grade 4 · 2 marks

Q	Answer	Mark	Comments
7	$1560 \div 6$	M1	oe, such as $156 \div 0.6$
	260	A1	

Question 8 N2 · Foundation · Grade 4 · 2 marks

Q	Answer	Mark	Comments
8(a)	2.5	B1	
8(b)	1.4	B1	

Question 9 N2 · Foundation · Grade 4 · 1 mark

Q	Answer	Mark	Comments
9	$48 \div 0.9$	B1	

Question 10 N10 · Higher · Grade 5 · 2 marks

Q	Answer	Mark	Comments
10	5 ÷ 12 by a written method, as far as 0.416	M1	oe
	0.41$\dot{6}$, with the dot over the 6 only	A1	accept 0.41666... (at least three 6s, then ...). Do not accept 0.4167 or 0.416

Question 11 N10 · Higher · Grade 6 · 3 marks

Q	Answer	Mark	Comments
11	$x = 0.4545...$ and $100x = 45.4545...$	M1	oe, two recurring decimals with the same digits after the point
	$99x = 45$	M1	oe, or $\frac{45}{99}$
	$\frac{45}{99} = \frac{5}{11}$	A1	with a cancelling step shown

Question 12 N10 · Higher · Grade 7 · 3 marks

Q	Answer	Mark	Comments
12(a)	$\frac{36}{99} = 0.363636...$ or only the 6 recurs, not the 36	B1	oe
12(b)	$100x - 10x = 36.666... - 3.666...$ or $90x = 33$	M1	oe, or $\frac{33}{90}$
	$\frac{11}{30}$	A1	

Question 13 N2 · Foundation · Grade 2 · 2 marks

Q	Answer	Mark	Comments
13	9×2.65 or 23.85	M1	oe
	1.15	A1	

Question 14 N2 N3 · Foundation · Grade 2 · 2 marks

Q	Answer	Mark	Comments
14	25.02 seen	M1	or $25.02 \div 4.6$
	5.439130435	A1	accept 5.4391... (at least 4 decimal places, cut or rounded), or $\frac{1251}{230}$

Question 15 N2 · Foundation · Grade 2 · 3 marks

Q	Answer	Mark	Comments
15(a)	14.60×0.385 or 5.621	M1	oe
	£5.62	A1	
15(b)	£4.38	B1ft	ft 10 – their (a)

Question 16 N2 · Foundation · Grade 2 · 2 marks

Q	Answer	Mark	Comments
16(a)	34.95	B1	
16(b)	6.05	B1ft	ft their (a) – 28.9

Question 17 N6 N2 · Foundation · Grade 2 · 3 marks

Q	Answer	Mark	Comments
17(a)	45.6976	B1	
17(b)	2.4	B1	
17(c)	46.25	B1	

Question 18 N2 · Foundation · Grade 2 · 2 marks

Q	Answer	Mark	Comments
18	$2590 \div 0.74$	M1	oe
	3500	A1	

Question 19 N10 · Foundation · Grade 2 · 2 marks

Q	Answer	Mark	Comments
19(a)	0.425	B1	
19(b)	No with 0.359375	B1	oe, accept 0.359...

Question 20 N2 · Foundation · Grade 2 · 2 marks

Q	Answer	Mark	Comments
20	$(7.935 - 0.465) \div 18$	M1	oe, or 7.47 seen
	0.415	A1	oe, 415 g

Question 21 N2 · Foundation · Grade 3 · 3 marks

Q	Answer	Mark	Comments
21(a)	$2.5 \div 0.18$ or 13.8...	M1	oe
	13	A1	
21(b)	0.16	B1ft	ft 2.5 – their (a) $\times 0.18$

Question 22 N2 G16 · Foundation · Grade 3 · 4 marks

Q	Answer	Mark	Comments
22	4.35×2.6 or 11.31	M1	
	their $11.31 \times 0.125 \times 2$ or 2.8275	M1	oe
	their $2.8275 \div 0.75$ or 3.77...	M1	oe, or 0.75s added until at least their 2.8275
	4	A1	

Question 23 N10 N1 · Foundation · Grade 3 · 2 marks

Q	Answer	Mark	Comments
23	$\frac{5}{8}$, 0.6299, 0.63, $\frac{12}{19}$, $\frac{7}{11}$	B2	B1 for all three fractions written as decimals (0.625, 0.636..., 0.631...), or one number in the wrong place

Question 24 N2 N13 · Foundation · Grade 3 · 3 marks

Q	Answer	Mark	Comments
24	148.9×36.45 or 5427.4...	M1	oe
	their $5427.4... \div 100$	M1	oe, or 1.489×36.45
	£54.27	A1	

Question 25 N2 · Foundation · Grade 3 · 3 marks

Q	Answer	Mark	Comments
25(a)	$60 \div 13.70$ or 4.37...	M1	oe, or a trial such as $4.3 \times 13.70 = 58.91$
	4.3	A1	not 4.4
25(b)	£1.09	B1ft	ft 60 – their (a) $\times 13.70$

Question 26 N2 · Foundation · Grade 3 · 3 marks

Q	Answer	Mark	Comments
26(a)	$24 \times 38.6 + 22 \times 12.75$	M1	oe, or 926.4 and 280.5 both seen
	Yes with 1206.9	A1	oe, or 6.9 kg over
26(b)	1	B1	

Question 27 N2 N13 · Foundation · Grade 3 · 3 marks

Q	Answer	Mark	Comments
27(a)	2131.2	B1	
27(b)	$(3000 - \text{their } 2131.2) \div 33.3$ or 26.0...	M1	oe, or $3000 \div 33.3 = 90.09...$ and $91 - 64$
	27	A1	not 26

Question 28 N13 N2 · Foundation · Grade 3 · 4 marks

Q	Answer	Mark	Comments
28(a)	8 hours 45 minutes or 525 minutes	M1	the time from 7:50 am to 4:35 pm
	8 hours 5 minutes	A1	oe, 485 minutes
28(b)	$\frac{485}{60} \times 12.64$ or $8.083... \times 12.64$	M1	oe, ft their (a); 8.05×12.64 is M0
	£102.17	A1	

Question 29 N2 · Foundation · Grade 4 · 3 marks

Q	Answer	Mark	Comments
29	312.4×24.5 or 7653.8	M1	oe, in pounds 76.538
	their $7653.8 + 30 \times 53.2$	M1	oe, $7653.8 + 1596 = 9249.8$
	£92.50	A1	