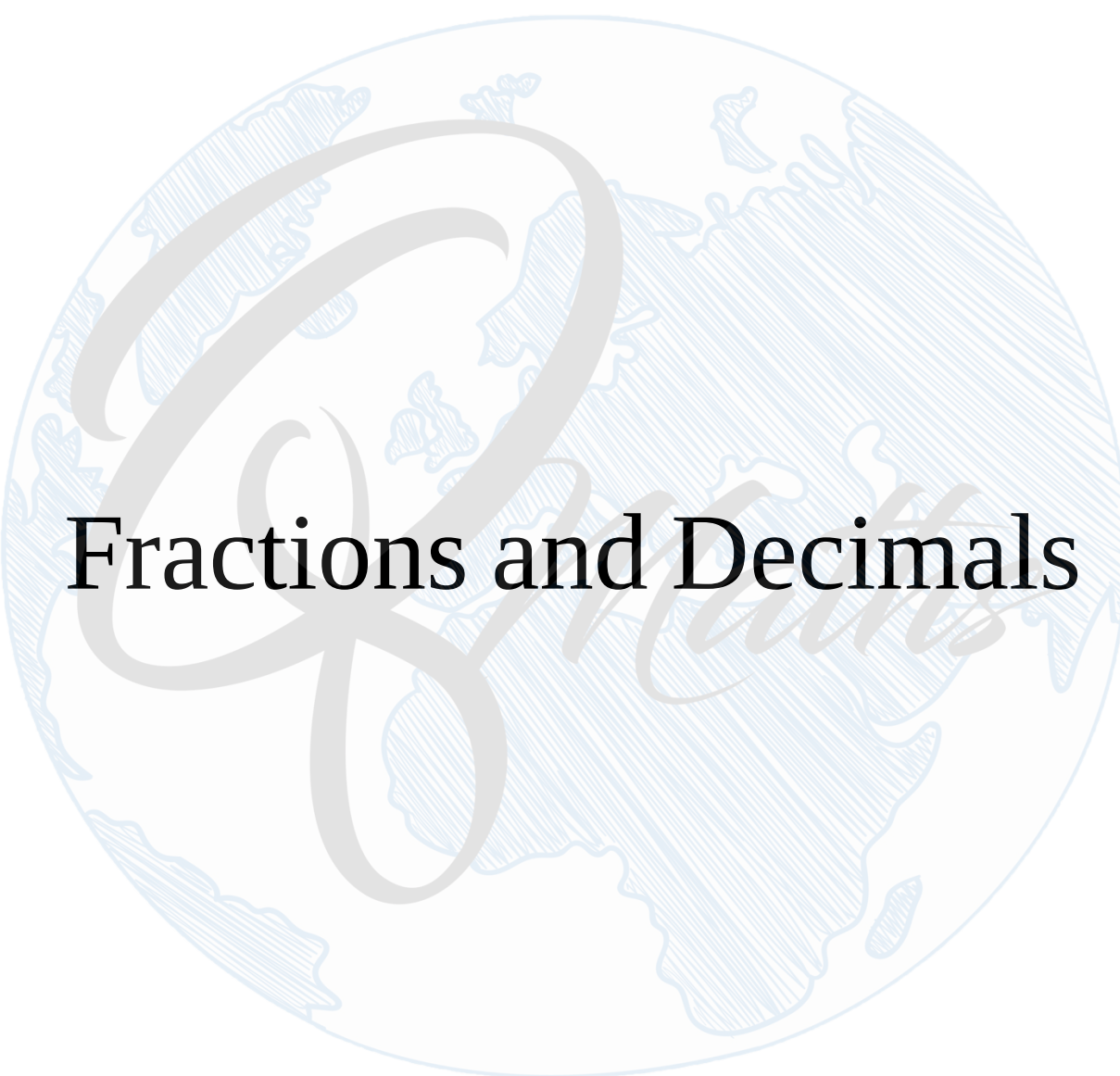




Fractions and Decimals

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1	1	$3.14 \quad \pi \quad \frac{22}{7} \quad \sqrt{10}$	2	M1 3.1428(...) and 3.16(2...) seen
2	3	$2 - \sqrt{3}, 2 - \frac{\sqrt{3}}{2}, \frac{2}{\sqrt{3}}, \sqrt{3}$	2	M1 correct decimals seen
3	6	$4.93\% < \frac{20}{41} < 0.492 < \frac{80}{161}$	2	Allow decimal equivalents in answer space M1 decimals 0.48(78..), 0.496(8..), 0.0493
4	4	0.8^2	2	M1 conversion of $\frac{16}{27}$ (= 0.5(9...)) and 0.8^2 (= 0.64) to decimals seen
5	3	$x - 5 \quad \frac{x}{5} \quad \frac{5}{x} \quad 5x$	2	M1 evaluating all 4 expressions for one value in the range. (1 and 2 are out of range)
6	7	$0.4^2 \quad 0.6^3 \quad 0.22 \quad \sqrt{0.09}$	2	M1 for decimal conversion 0.216 and 0.3 and 0.16
7	2	$3 \quad 3.14 \quad \pi \quad 3.142 \quad \frac{22}{7}$	2	B1 for 3.141[5...] to 3.1416 and 3.1428 to 3.1429 or 3.143 seen or SC1 for 4 in correct order
8	13	10[.00]	3	M2 for 1.90 and 2.90 and 5.20 only or M1 for two of 1.90, 2.90, 5.20 in a list of three or two values from the table or SC1 FOR 1.90, 2.90, 4.30 $\left[\text{from } \frac{3.40 + 5.20}{2} \right]$
9	3 (a) (b)	06 41 \$204	1 1	Allow 6.41(am). 6:41 and 06:41 Not 6h41m or 641h or 6.41pm
10	2	1.2496 cao	2	Allow $1 \frac{156}{625}$ M1 $1 + 0.2 + 0.04 + 0.008 + 0.0016$
11	8	Answer given so only working scores marks	2	M1 $7/27 + 48/27$ or $7/27 + (1)21/27$ M1 completely correct finish
12	5	Correct working	2	M1 $\frac{15}{4} + \frac{4}{3} = \frac{45}{12} + \frac{16}{12}$ M1 $\frac{61}{12} = 5 \frac{1}{12}$

13	3	Working must be shown	2	M1 $\frac{14}{9}$ and $\frac{16}{9}$ M1 $\frac{14}{16} = \frac{7}{8}$ oe or visible cancelling
14	7 (a)	36	1	
	(b)	correct working	2	M1 for $\frac{7}{6}$ oe improper fraction M1 for $\frac{12}{21} = \frac{4}{7}$ oe or visible cancelling
15	1	7.5(0) cao	2	M1 for $\frac{258.75}{4.6}$
16	4	Answer given	3	M1 $\frac{19}{15}$ M1 $\frac{6}{15}$ or $\times \frac{15}{6}$ seen E1 $= \frac{19}{6} = 3\frac{1}{6}$
17	5	$2\frac{1}{12}$ cao with correct working	3	M1 (1+) $\frac{6}{12} + \frac{4}{12} + \frac{3}{12}$ oe A1 (1) $\frac{13}{12}$ or $\frac{25}{12}$ oe
18	8	0.186	2	B1 for 2.477 to 2.478 or 13.29... seen
19	12	$\frac{55}{30} + \frac{27}{30}$ oe or (1) $\frac{25}{30} + \frac{27}{30}$ oe $\frac{82}{30}$ oe or (1) $\frac{52}{30}$ oe $2\frac{11}{15}$ M2 must be scored	M1 M1 A1	for denominator of $30k$ for denominator of $30k$ dependent on previous M1 If M0 scored then SC1 for common denominator of $30k$ seen
20	4	25 (correct working essential)	2	M1 for $18 + 4 + 3$ with denominator 12 must be soi (oe is possible)
21	12 (a)	$\frac{11}{12} - \frac{4}{12}$ oe $\frac{7}{12}$ cao ww 0	2	M1 correct use of a common denominator A1
	(b)	$\frac{1}{4} \times \frac{13}{11}$ oe $\frac{13}{44}$ cao ww 0	2	M1 inversion and operation change A1

22	2	$[0].852$ or $\frac{23}{27}$	2	B1 for 85.56 or $\frac{2139}{25}$
23	4	$\frac{17}{\frac{9}{5}}$ or $\frac{17}{9} \div \frac{5}{2}$ $\frac{17}{9} \times \frac{2}{5} = \frac{34}{45}$	M1 $\frac{34}{\frac{18}{45}}$ or $\frac{34}{18} \div \frac{45}{18}$ M1 $\frac{34}{18} \times \frac{18}{45} = \frac{34}{45}$	
24	2	$\frac{1}{100} + \frac{4}{25}$ or $0.1^2 + 0.4^2$ oe $\frac{1}{100} + \frac{16}{100} = 0.17$ or $0.01 + 0.16 = 0.17$	M1 M1 Independent	
25	5	correct working; e.g. $\frac{3k}{2k} \times \frac{16n}{3n} = 8$	2 M1 for $\frac{3k}{2k}$ and A1 for $\frac{3k}{2k} \times \frac{16n}{3n} = 8$	
26	11	with 2 correct steps seen $\frac{18k}{35k}$	3 B1 for $\frac{5k}{3k}$ and M1 for $\frac{6}{7} \times \text{their } \frac{3}{5}$	
27	4 (a)	$[\pm] \mathbf{2.28}$ or 2.282 to 2.2822	1	
	(b)	0.109 or 0.1094[3...]	1	
28	5	$\left(\frac{2}{3}\right)^{1.5}$ $\left(-\frac{2}{3}\right)^{\frac{2}{3}}$ $(1.5)^{\frac{2}{3}}$ $\left(\frac{2}{3}\right)^{-1.5}$	2 M1 for at least 2 correct decimals seen 1.3[1..] 0.5[4..] 1.8[3..] or 1.84 0.7[6..]	
29	15	(a) $\frac{9}{12} - \frac{1}{12}$ oe $[=] \frac{8}{12}$ oe $[=] \frac{2}{3}$ (b) $\frac{5}{2} \times \frac{4}{25}$ oe Cancelling shown or $\frac{20}{50}$ oe $[=] \frac{2}{5}$	M1 Must be shown M1 Both fractions must be shown M1 Must be shown M1 Dependent and cancelling shown or a fraction and then $\frac{2}{5}$ must be shown	

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30	2	$18\frac{1}{18}$	2	M1 for $\frac{2}{36} + \frac{36}{2}$ or better
31	1	1.49 or 1.491...	1	
32	8	$\left[\frac{1}{2} \times 1\frac{1}{2} = \right] \frac{3}{4} \text{ oe}$ $\frac{5 \times 2}{6 \times 2} \text{ and } \frac{3 \times 3}{4 \times 3} \text{ oe or better}$ $\frac{1}{12} \text{ oe}$ working must be shown	B1 M1FT A1	
33	10	$\frac{5}{4} \text{ oe}$ $\frac{5 \times 9}{4 \times 9} \text{ and } \frac{7 \times 4}{9 \times 4} \text{ oe or better}$ $\frac{17}{36} \text{ oe working must be shown}$	B1 M1 FT A1	Do not allow decimals for the B1 , M1 , or A1 e.g. $\frac{45}{36}$ and $\frac{28}{36}$ Follow through <i>their</i> $\frac{5}{4}$ for the M1 mark. Alt method 1: B1 for $\frac{1}{4} + \frac{2}{9}$ M1 for $\frac{1 \times 9}{4 \times 9}$ and $\frac{2 \times 4}{4 \times 9}$ oe e.g. $\frac{9}{36}$ and $\frac{8}{36}$ Alt method 2: B1 for $\frac{1}{4} - \frac{7}{9} + 1$ M1 for oe e.g. $\frac{9}{36}$ and $\frac{8}{36}$ ISW converting fraction answer to a decimal.
34	5	$\frac{3}{12}$ and $\frac{2}{12}$ $\frac{5}{12} \text{ cao}$	M1 A1	Equivalent denominators can be used, working must be shown.
35	2	20	1	
36	8	$\frac{7}{6} \text{ oe}$ <i>their</i> $\frac{7}{6} \times \frac{8}{7} \text{ oe}$ $\frac{4}{3}$ or $1\frac{1}{3} \text{ cao}$ must see working	B1 M1 A1	Or M1 for $\frac{56}{48} \div \frac{42}{48}$ or equivalent division with fractions with common denominator
37	2	0.34 0.7^3 0.6^2 $\sqrt{0.6}$	2	M1 for decimal conversion: 0.7 [7...] or 0.8 for $\sqrt{0.6}$ and 0.36 for 0.6^2 and 0.343 for 0.7^3 or B1 for three in the correct order

38	2	7.37 or 7.371...	1	
39	12	$\frac{8}{3}$ $\frac{4}{5} \times \text{their } \frac{3}{8}$ oe $\frac{3}{10}$ cao	B1 M1 A1	or $\frac{40}{15}$ accept $\frac{3}{8}$ or $\frac{15}{40}$ or $\frac{12}{15} \div \text{their } \frac{40}{15}$ or equivalent division with fractions with common denominators
40	8	$\frac{15}{8}$ $\text{their } \frac{15}{8} \times \frac{9}{5}$ oe $\frac{27}{8}$ or $3\frac{3}{8}$ cao	B1 M1 A1	or $\frac{135}{72}$ or $\frac{135}{72} \div \frac{40}{72}$ or equivalent division with fractions with common denominators
41	12	$\frac{8}{3}$ $\frac{4}{5} \times \text{their } \frac{3}{8}$ oe $\frac{3}{10}$ cao	B1 M1 A1	or $\frac{40}{15}$ accept $\frac{3}{8}$ or $\frac{15}{40}$ or $\frac{12}{15} \div \text{their } \frac{40}{15}$ or equivalent division with fractions with common denominators
42	2	[0].101 or [0].1005 to [0].1006	1	
43	15	Any two of $\frac{8}{12}, \frac{2}{12}$ or $\frac{3}{12}$ oe $\frac{8}{12} + \frac{2}{12} - \frac{3}{12}$ oe $\frac{7}{12}$	M1 M1 A1	M1 for any 2 correct over a common denominator e.g. $\frac{4}{6}$ and $\frac{1}{6}$ or SC2 for final answer $\frac{13}{12}$ or $1\frac{1}{12}$ with full working
44	16	$\frac{25}{9}$ $\frac{a}{b} \times \frac{6}{5}$ where $a > b$ $\text{Their } \frac{150}{45}$ or their correct full cancelling $\frac{10}{3}$ or $3\frac{1}{3}$ nfw	B1 M1 M1FT dep A1	(Alt) $\frac{25}{9}$ $\frac{\text{their } 25 \times 2}{9 \times 2} \div \frac{5 \times 3}{6 \times 3}$ oe $\frac{\text{their } 25 \times 2}{5 \times 3}$ oe or $\frac{50}{18} \div \frac{15}{18}$ oe with 18's cancelled

45	9	$\frac{9}{5}$ <i>their</i> $\frac{9}{5} \times \frac{7}{3}$ or $\frac{9 \times 7}{5 \times 3}$ $\frac{21}{5}$ or $4\frac{1}{5}$ cao	B1 M1 A1	or $\frac{63}{35}$ or <i>their</i> $\frac{63}{35} \div \frac{15}{35}$ or equivalent division with fractions with common denominators
46	10	54	3	M2 for $14.4 \times \frac{15}{4}$ oe or M1 for $14.4 \div 4$ or $\frac{4}{15}$ associated with 14.4 If zero scored SC1 for final answer 19.6[4]
47	9	$\frac{35(\text{or } 95)}{60} + \frac{39}{60}$ $2\frac{7}{30}$	M1 A2	accept $\frac{35k(\text{or } 95k)}{60k} + \frac{39k}{60k}$ or A1 for $\frac{67}{30}$ or $\frac{134k}{60k}$ or $1\frac{74k}{60k}$ or $2\frac{14k}{60k}$
48	16	$\frac{6}{7} \times \frac{3}{5}$ or $\frac{18}{21} \div \frac{35}{21}$ oe $\frac{18}{35}$ cao	M2 A1	B1 for $\frac{5}{3}$ oe or M1 for $\frac{6}{7} \times \text{their } \frac{3}{5}$
49	2	5.89 or 5.885 to 5.886	1	
50	14	$\frac{21}{8} \times \frac{3}{7}$ oe $1\frac{1}{8}$ cao final answer	M1 A2	Must be shown A1 for $\frac{9}{8}$ oe e.g. $\frac{63}{56}$
51	5	$\frac{1}{12} \times \frac{6}{5}$ oe $\frac{1}{10}$ final answer cao	M1 A1	Must be shown
52	4	157 900 cao	2	B1 for 158000 or 157860 or 157862 to 157863 If zero scored, SC1 for <i>their</i> answer to more than 4 figs correctly rounded to 4 sf

53	14	$6\frac{2}{3}$ oe	3	M1 for $y = k\sqrt{x+2}$ oe or better e.g. $2 = k\sqrt{7+2}$ M1 for $[y =]$ their $k \times \sqrt{98+2}$ or M2 for $\frac{y}{2} = \frac{\sqrt{98+2}}{\sqrt{7+2}}$
54	5	$\frac{18}{30}$ and $\frac{5}{30}$ oe must be shown $\frac{23}{30}$ cao	M1 A1	$\frac{18k}{30k}$ and $\frac{5k}{30k}$
55	13	$\frac{2}{9}$ oe, must be a fraction	2	M1 for $2.\dot{2} - 0.\dot{2}$ oe or B1 for $\frac{k}{9}$
56	9	$\frac{23}{90}$ oe, must be fraction	2	M1 for $25.\dot{5} - 2.\dot{5}$ oe e.g. $2.55^r - 0.25^r$ or B1 for $\frac{k}{90}$
57	10	$\frac{14}{90}$ oe must be fraction	2	M1 for $15.\dot{5} - 1.\dot{5}$ oe or B1 for $\frac{k}{90}$
58	6	$\frac{4}{9}$ oe, must be fraction	2	M1 for $10 \times 0.\dot{4} - 0.\dot{4}$ oe
59	12	$\frac{11}{30}$ cao	3	B2 for $\frac{33}{90}$ oe as final answer or M1 for $36.\dot{6} - 3.\dot{6}$ or $36.6^r - 3.6^r$ oe or B1 for $\frac{k}{90}$
60	8	$\frac{29}{90}$ oe, must be a fraction	2	M1 for $32.\dot{2} - 3.\dot{2}$ or B1 for $\frac{k}{90}$

61	12 (a)	$\frac{1}{8}$ cao	1	
	(b)	$\frac{2}{11}$	2	M1 for $18.\dot{1}8-0.\dot{1}8$ oe or B1 for $\frac{2k}{11k}$ (k not 0 or 1)
62	3	$\frac{7}{11}$ oe	1	



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