Fractions

Mark Scheme

Level	IGCSE
Subject	Maths
Exam Board	Edexcel
Topic	Number and Algebra
Sub Topic	Fractions
Booklet	Mark Scheme

Time Allowed: 41 minutes

Score: /34

Percentage: /100

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	75%	70%	60%	55%	50%	<50%

Question Number	Working	Answer	Mark		Notes
1.	$\frac{10}{12}$ and $\frac{9}{12}$ eg $\frac{10-9}{12}$, $\frac{10}{12} - \frac{9}{12}$		2	B2	B1 for $\frac{10}{12}$ or $\frac{9}{12}$ Also accept $\frac{5\times2}{6\times2}$ or $\frac{3\times3}{4\times3}$
					Alternative method B1 for both fractions correctly expressed as equivalent fractions with denominators that are common multiples of 6 and 4 eg $\frac{20}{24}$ and $\frac{18}{24}$ or $\frac{5\times4}{6\times4}$ and $\frac{3\times6}{4\times6}$ B1 (dep on first B1) for evaluation as a correct fraction which is equivalent to $\frac{1}{12}$ eg $\frac{2}{24}$
					SC B1 for multiplying both sides by 12 ie 10 − 9 = 1
					Total 2 marks

2. (a)	4/5 x 15/7		12/7 oe	2	M1 or 12a/15a ÷ 7a/15a (denominators the same and a multiple of 15) A1 dep on M1. Improper fraction equivalent to 1 5/7 required produced directly from M1
(b)	21/4 – 5/3 63a/12a – 20a/12a		43/12 oe	3	M1 Correct improper fractions M1 Correct fractions with a common denominator a multiple of 12 A1 dep on M2 Improper fraction required.
					Alt method M1 (5) 3/12 – (1) 8/12 (i.e. can ignore integer parts) M1 – 5/12 A1 Improper fraction required or 4 – 5/12. Ans dep on M2.
					Alt method M1 (4) 5/4 – (1) 2/3 (i.e. can ignore integer parts) M1 (4) 15/12 – (1) 8/12 (i.e. can ignore integer parts) A1 (3 +) 7/12 or improper fraction Ans dep on M2
					NB: Follow one strand that gives most marks.
					Total 5 marks

3.	$\dfrac{8}{18} - \dfrac{3}{18}$ **or** $\dfrac{8n}{18n} - \dfrac{3n}{18n}$ $\dfrac{8}{18} - \dfrac{3}{18} = \dfrac{5}{18}$ **or** $\dfrac{8n}{18n} - \dfrac{3n}{18n} = \dfrac{5n}{18n}\left(= \dfrac{5}{18}\right)$			2	M1 for 2 correct fractions with a common denominator a multiple of 9 & 6 A1 $\dfrac{5}{18}$ coming from $\dfrac{8}{18} - \dfrac{3}{18}$ **or** for final fraction equivalent to $\dfrac{5}{18}$
					Total 2 marks

4. (a)	$21/24 - 20/24 = 1/24$			2	B2	for both fractions written correctly with a common denominator, followed , if necessary, by cancelling to 1/24
					B1	for 1 correct fraction with denominator of a multiple of 24
(b)	$5/8 \times 12/7$ or $15/24 \div 14/24$				M1	leaving first fraction unchanged, changing ÷ to x and inverting the second fraction or converting each fraction with a common denominator of 24 oe with ÷ sign
			60/56	2	A1	60/56 from the x or 15/14 from the ÷
						Total 4 marks

5. (a)	$\dfrac{3\times4}{15}+\dfrac{5\times2}{15}$ or $\dfrac{12}{15}+\dfrac{10}{15}$				M1	Any pair of correct fractions with a denominator a multiple of 15
			$\dfrac{22}{15}$	2	A1	Dependent on M1
(b)	$\dfrac{9}{4}\div\dfrac{7}{2}$				M1	Correct improper fractions (may be implied by second M1)
	$\dfrac{9}{4}\times\dfrac{2}{7}$ oe				M1	
			$\dfrac{18}{28}$	3	A1	Award A1 for 9/14 if cancelling seen to have taken place.
(b)	Alternative: $\dfrac{9}{4}\div\dfrac{7}{2}$				M1	Correct improper fractions (may be implied by second M1)
	$\dfrac{9}{4}\div\dfrac{14}{4}$				M1	Denominators must be the same.
			$\dfrac{9}{14}$ oe	3	A1	Must lead directly from 2nd M1
						Total 5marks

Question	Working	Answer	Mark	Notes
6.	$\frac{4}{9} \times \frac{6}{5}$ oe	$\frac{24}{45}$ oe	2	M1 or $\frac{0.8}{1.5}$ A1 dep on M1. Accept $\frac{8}{15}$ if clear cancelling seen
	Alternative: $\frac{8n}{18n} \div \frac{15n}{18n}$ for any integer n	$\frac{8}{15}$ oe	2	M1 $\frac{8n}{18n} \div \frac{15n}{18n}$ A1 d p on M1. Answer must come directly from their method eg $\frac{16}{36} \div \frac{30}{36}$ must be followed by $\frac{16}{30}$ for M1A1
				Total 2 marks

Question	Working	Answer	Mark	Notes
7.	$\dfrac{15}{2} - \dfrac{14}{3} = \dfrac{45a}{6a} - \dfrac{28a}{6a}$	shown	3	M1 Correct improper fractions
				M1 Correct fractions with a common denominator a multiple of 6
				A1 dep on M2 Improper fraction required eg $\dfrac{17}{6}, \dfrac{34}{12}$
				Alt method
				M1 $(7)\dfrac{3}{6} - (4)\dfrac{4}{6}$ (ie can ignore integer parts)
				M1 $-\dfrac{1}{6}$
				A1 Improper fraction required eg $\dfrac{17}{6}, \dfrac{34}{12}$ **or** $3 - \dfrac{1}{6}$
				Answer dep on M2
				Alt method
				M1 $7\dfrac{3}{6} - 4\dfrac{4}{6}$
				M1 $6\dfrac{9}{6} - 4\dfrac{4}{6}$
				A1 $2\dfrac{5}{6}$ required before final answer
				Answer dep on M2
				NB: Follow one strand that gives most marks
				Total 3 marks

8.	$\dfrac{3}{8} \times \dfrac{12}{7}$			M1	
		$\dfrac{36}{56}$ oe	2	A1	dep on M1 Accept $\dfrac{9}{14}$ if clear cancelling seen NB: Use of decimals gains M0 A0
	Alternative : $\dfrac{9n}{24n} \div \dfrac{14n}{24n}$ for any integer *n*			M1	Must see an intention to divide
		$\dfrac{9}{14}$ oe	2	A1	dep on M1 Answer must come directly from their method eg. $\dfrac{36}{96} \div \dfrac{56}{96}$ must be followed by $\dfrac{36}{56}$
					Total 2 marks

9.	$\dfrac{14.14}{3.5}$				M1	For $\dfrac{a}{b}$ where *a* and *b* are single numbers and $a = 14.14$ and/or $b = 3.5$
			4.04	2	A1	Accept $\dfrac{101}{25}$
						Total 2 marks

10.	$\frac{3 \times 5}{20} + \frac{4 \times 4}{20}$ or $\frac{15}{20} + \frac{16}{20}$			M1	for any pair of correct fractions with denominator a multiple of 20
		$\frac{31}{20}$	2	1	dependent on M1
	Alternative $0.75 + 0.8 = 1.55$			M1	
		$1\frac{55}{100}$		A1	dependent on M1
					Total 2 marks

11.	a	$\dfrac{9}{30} + \dfrac{4}{30}$		2	M1	for $\dfrac{9}{30}$ or $\dfrac{4}{30}$ **or** both fractions expressed as equivalent fractions with denominators that are a common multiple of 10 and 15 eg. $\dfrac{45}{150}$ and $\dfrac{20}{150}$
			shown		A1	conclusion to given answer coming from correct working
	b	$\dfrac{21}{8} \div \dfrac{7}{6}$ **or** $\dfrac{21}{8}$ **and** $\dfrac{7}{6}$		3	M1	Both fractions expressed as improper fractions eg. $\dfrac{63}{24},\dfrac{28}{24}$
		$\dfrac{21}{8} \times \dfrac{6}{7}$ **or** $\dfrac{126}{56}$			M1	**or** for both fractions expressed as equivalent fractions with denominators that are a common multiple of 8 and 6 eg. $\dfrac{126}{48} \div \dfrac{56}{48}$ **or** $\dfrac{63}{24} \div \dfrac{28}{24}$
			shown		A1	conclusion to $2\dfrac{1}{4}$ or $\dfrac{9}{4}$ from correct working – either sight of the result of the multiplication e.g. $\dfrac{126}{56}$ must be seen or correct cancelling prior to the multiplication with $\dfrac{9}{4}$
						Total 5 marks