

1	(a)		3 squares shaded	1	B1
	(b)		$3\frac{4}{5}$	1	B1 oe for an equivalent mixed number
	(c)		$\frac{4}{11}$	1	B1 oe
	(d)		$\frac{14}{18}$	1	B1 for any fraction equivalent to $\frac{7}{9}$
	(e)		$\frac{3}{100}$	1	B1 oe
Total 5 marks					

2	$0.32 \times 450 (= 144)$ oe or $\frac{2}{5} \times 375 (= 150)$ oe		3	M1
	$0.32 \times 450 (= 144)$ oe and $\frac{2}{5} \times 375 (= 150)$ oe			M1
		144 and 150 and $\frac{2}{5}$ of 375		A1
Total 3 marks				

3	e.g. $\frac{15}{4}$		3	M1 for $3\frac{3}{4}$ expressed as an improper fraction
	e.g. $\frac{15^3}{4} \times \frac{7}{9^3}$ OR $\frac{105}{36}$ oe			M1 correct cancelling or multiplication of numerators and denominators without cancelling
	e.g. $\frac{15^3}{4} \times \frac{7}{9^3} = \frac{35}{12} = 2\frac{11}{12}$ or $\frac{15}{4} \times \frac{7}{9} = \frac{105}{36} = \frac{35}{12} = 2\frac{11}{12}$ or $\frac{15}{4} \times \frac{7}{9} = \frac{105}{36} = 2\frac{33}{36} = 2\frac{11}{12}$	shown		A1 dep on M2, for conclusion to $2\frac{11}{12}$ from correct working – either sight of the result of the multiplication e.g. $\frac{105}{36}$ oe must be seen or correct cancelling prior to the multiplication to $\frac{35}{12}$ NB: use of decimals scores no marks
Total 3 marks				

4	(d)	$\frac{45}{60}, \frac{24}{60}, \frac{28}{60}, \frac{40}{60}$ or 0.75, 0.4, 0.466..., 0.666... or 75%, 40%, 46.6%, 66.6%		2	M1 for a method to compare the fractions If M0, award B1 for any three of these fractions in the correct order or for all fractions (or dec or perc) in correct reverse order
			$\frac{2}{5}, \frac{7}{15}, \frac{2}{3}, \frac{3}{4}$		A1 allow answers in any form (dec or perc)
	(e)	$\frac{36}{96}$ oe		2	M1 for fraction or for partial simplification.
		$\frac{3}{8}$		A1 cao correct answer scores full marks	

5	$\frac{10}{24} + \frac{9}{24}$ or $\frac{10n}{24n} + \frac{9n}{24n}$ or eg $\frac{40+36}{96} \left(= \frac{76}{96} \right)$		2	M1 for writing a sum, and each fraction with a common denominator, eg $\frac{10}{24} + \frac{9}{24}$
	$\frac{10}{24} + \frac{9}{24} = \frac{19}{24}$ or eg $\frac{40+36}{96} = \frac{76}{96} = \frac{19}{24}$	clearly shown		A1 dep on M1 continued to clearly show given result
Total 2 marks				

6	(a)	E.g. $\frac{6}{10}, \frac{9}{15}, \frac{12}{20}, \frac{15}{25}, \frac{18}{30}, \frac{21}{35}$		2	M1	for any fraction equivalent to $\frac{24}{40}$ with denominator less than 40
			$\frac{3}{5}$		A1	
	(b)		0.2	1	B1	
	(c)		$\frac{3}{10}$ oe	1	B1	
	(d)	$\frac{9n}{24n} + \frac{1n}{24n}$ or $\frac{9n+1n}{24n}$		2	M1	for correct fractions with a common denominator (multiple of 24)
		eg $\frac{10}{24} = \frac{5}{12}$	Shown		A1	for a multiple of $\frac{10n}{24n} = \frac{5}{12}$
	(e)	$\frac{1}{2} \times 280 (= 140)$ oe or $\frac{2}{5} \times 280 (= 112)$ oe		3	M1	
		280 - '140' - '112'			M1	
			28		A1	
		Alternative method				
		$\frac{1}{2} + \frac{2}{5} (= \frac{9}{10})$ or $0.5 + 0.4 (= 0.9)$ oe		3	M1	
		$(1 - \frac{9}{10}) \times 280$ or $(1 - '0.9') \times 280$ oe			M1	
			28		A1	
Total 9 marks						

7	c		$8\frac{4}{7}$	1	B1	oe
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8		$\frac{2}{5} \times \frac{20}{11}$ or eg $\frac{8}{20} \div \frac{11}{20}$		2	M1	For inverting $\frac{11}{20}$ and a clear intention to multiply or for writing both fractions correctly over the same common denominator
		$\frac{2}{5} \times \frac{20}{11} = \frac{40}{55} = \frac{8}{11}$ or $\frac{2}{\cancel{8}^4} \times \frac{2\cancel{0}^4}{11} = \frac{8}{11}$ or $\frac{8}{20} \div \frac{11}{20} = \frac{8}{11}$	Clearly shown		A1	dep on M1 continued to clearly show given result
Total 2 marks						

9	c	$7 \div 8 \times 100$ oe			M1	
			87.5	2	A1	

10		e.g. $\frac{16}{5}$ and $\frac{21}{8}$ oe			M1	both fractions expressed as improper fractions
		e.g. $\frac{16^2}{5} \times \frac{21}{8^1}$ OR $\frac{336}{40}$ oe			M1	correct cancelling OR multiplication of numerators and denominators without cancelling
		e.g. $\frac{16}{5} \times \frac{21}{8} = \frac{336}{40} = \frac{42}{5} = 8\frac{2}{5}$ or $\frac{16}{5} \times \frac{21}{8} = \frac{336}{40} = 8\frac{16}{40} = 8\frac{2}{5}$ or $\frac{16^2}{5} \times \frac{21}{8^1} = \frac{42}{5} = 8\frac{2}{5}$ or candidate clearly shows that in the question, the result of $8\frac{2}{5} = \frac{42}{5}$ and that their answer becomes $\frac{42}{5}$	shown	3	A1	Dep on M2 for conclusion to $8\frac{2}{5}$ from correct working – either sight of the result of the multiplication e.g. $\frac{336}{40}$ must be seen or correct cancelling prior to the multiplication to $\frac{42}{5}$ NB: use of decimals scores no marks
Total 3 marks						

11	(a)		$\frac{11}{15}$	1	B1oe
	(b)		$4\frac{3}{5}$	1	B1oe eg $4\frac{6}{10}$
	(c)		$\frac{23}{100}$	1	B1oe eg $\frac{46}{200}$
	(d)		0.4	1	B1 Accept 0.40
	(e)		3.555, 3.61, 3.7, 3.82, 3.9	1	B1
Total 5 marks					

12	(a)	$\frac{40}{750}$ oe		2	M1 Numerator and denominator must be integers.
			$\frac{4}{75}$		A1
	(b)	$\frac{40}{100} \times 6.8$ oe		2	M1
			2.72		A1
	(c)	$\frac{3}{40} \times 100$ oe		2	M1
			7.5		A1
Total 6 marks					

13	(a)		0.25	1	B1
	(b)	$3\frac{4}{10}$ or $\frac{17}{5}$		2	M1 for converting to a simplified improper fraction or an unsimplified mixed fraction
			$3\frac{2}{5}$		A1
	(c)	$\frac{3}{4} \times \frac{16}{15}$ or E.g. $\frac{12}{16} \div \frac{15}{16}$		2	M1
		E.g. $\frac{3}{4} \times \frac{16}{15} = \frac{48}{60} = \frac{4}{5}$ or $\frac{12}{16} \div \frac{15}{16} = \frac{12}{15} = \frac{4}{5}$ or	Shown		A1 for fully correct method leading to $\frac{4}{5}$ - this must be preceded by a correct equivalent fraction e.g. $\frac{48}{60}$, $\frac{12}{15}$, $\frac{16}{20}$ or fully correct cancelling must be seen within a multiplication
Total 5 marks					

14	(a)	16 : 40 or 8 : 20 or 4 : 10		2	M1 for any correct cancelling or 5 : 2
			2 : 5		A1 cao
	(b)		$\frac{5}{12}$	1	B1
Total 3 marks					

15		$\frac{14}{3} (+) \frac{19}{5}$ or $(4) \frac{10}{15} (+)(3) \frac{12}{15}$ or $(4) \frac{10a}{15a} (+)(3) \frac{12a}{15a}$		3	M1 for correct improper fractions or fractional part of numbers written correctly over a common denominator
		eg $\frac{14 \times 5 + 19 \times 3}{3 \times 5}$ or $\frac{70}{15} + \frac{57}{15}$ or $\frac{70a}{15a} + \frac{57a}{15a}$ or $4\frac{10}{15} + 3\frac{12}{15} = 7\frac{22}{15}$ oe			M1 for correct fractions with a common denominator of 15 or a multiple of 15
		$\frac{70}{15} + \frac{57}{15} = \frac{127}{15} = 8\frac{7}{15}$ or $7\frac{22}{15} = 8\frac{7}{15}$ or if shows $8\frac{7}{15} = \frac{127}{15}$ at the beginning then show that the addition comes to $\frac{127}{15}$	Shown		A1 dep on M2 for a correct answer from fully correct working or shows that RHS = $\frac{127}{15}$ and fully correct working shows LHS = $\frac{127}{15}$
Total 3 marks					

16	(c)		$\frac{73}{100}$	1	B1 oe eg $\frac{730}{1000}$ Do not allow $\frac{7.3}{10}$
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17	(a)	<p><i>For information</i></p> $\frac{3}{8} = \frac{30}{80} = 0.375 \text{ or } 0.38 \text{ or } 37[.5\%] \text{ or } 38[\%]$ $\frac{1}{4} = \frac{20}{80} = 0.25 \text{ or } 25[\%]$ $\frac{7}{20} = \frac{28}{80} = 0.35 \text{ or } 35[\%]$ $\frac{5}{16} = \frac{25}{80} = 0.31[25] \text{ or } 31[.25\%]$	$\frac{1}{4}, \frac{5}{16}, \frac{7}{20}, \frac{3}{8}$	2	B2 can be given as fraction, decimal or percentage equivalents B1 for 3 fractions oe in the correct order or for 4 fractions oe in the correct reverse order or for 2 fractions correctly converted to decimals or percentages or 2 fractions written with a common denominator that is a multiple of 80
	(b)		$\frac{5}{14}$	1	B1 oe but must be fraction Do not allow 5:14 or 5 out of 14
Total 3 marks					

18	(a)		12 squares shaded	1	B1 can be any 12 squares shaded – use professional judgement as to whether a square is shaded or not
	(b)		$\frac{14}{17}$	1	B1 with no others may be indicated in list
	(c)		30	1	B1
	(d)		$8\frac{5}{9}$	1	B1
	(e)	$40 \div 5 \times 6$ oe eg $\frac{6}{5} \times 40$ oe		2	M1 A fully correct method
		<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i>	48		A1 trial and improvement scores no marks unless fully correct
Total 6 marks					

19	eg $\frac{18}{7}$ and $\frac{9}{8}$ oe			3	M1 both fractions expressed as improper fractions, no need for \div or \times may be equivalent to those given eg $\frac{36}{14}$ or $\frac{27}{24}$ etc. A student could invert $\frac{9}{8}$ and go straight to the 2nd M1, this mark is then implied.
	eg $\frac{18}{7} \times \frac{8}{9}$ oe or $\frac{144}{56} \div \frac{63}{56}$ oe				M1 or for both fractions expressed as equivalent fractions with denominators that are a common multiple of 7 and 8 eg $\frac{144}{56} \div \frac{63}{56}$
	<p>eg $\frac{18}{7} \times \frac{8}{9} = \frac{144}{63} = \frac{16}{7} = 2\frac{2}{7}$</p> <p>or $\frac{18}{7} \times \frac{8}{9} = \frac{144}{63} = 2\frac{18}{63} = 2\frac{2}{7}$</p> <p>or $\frac{18^2}{7} \times \frac{8}{9^2} = \frac{16}{7} = 2\frac{2}{7}$</p> <p>or $\frac{18}{7} \div \frac{9}{8} = \frac{144}{56} \div \frac{63}{56} = \frac{144}{63} = \frac{16}{7} = 2\frac{2}{7}$</p> <p>or correct working to $\frac{16}{7}$ and writing $2\frac{2}{7} = \frac{16}{7}$</p>	shown			A1 Dep on M2 for conclusion to $2\frac{2}{7}$ from correct working – either sight of the result of the multiplication or division e.g. $\frac{144}{63}$ must be seen or correct cancelling prior to the multiplication to $\frac{16}{7}$ or writing $2\frac{2}{7} = \frac{16}{7}$ (maybe on first line of working) and correct working as far as LHS = $\frac{16}{7}$ NB: use of decimals scores no marks
Total 3 marks					

20	a		6 squares shaded	1	B1
	b		$\frac{3}{10}$	1	B1
	c	$\frac{1}{2} = \frac{30}{60} = 0.5$ or 50% $\frac{3}{4} = \frac{45}{60} = 0.75$ or 75% $\frac{4}{5} = \frac{48}{60} = 0.8$ or 80% $\frac{5}{6} = \frac{50}{60} = 0.83\dots$ or 83...%	$\frac{1}{2}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6}$	2	B2 can be given as fraction, decimal or percentage equivalents B1 for 3 fractions in the correct order or for 4 in fractions in the correct reverse order or for 2 fractions correctly converted to decimals or percentages or 2 fractions written with a common denominator that is a multiple of 60
	d	$14 \div 5 \times 9$			M1
			25.2	2	A1 oe
Total 6 marks					

21	e.g. $\frac{16}{5}$ and $\frac{11}{6}$ or $\frac{96}{30}$ and $\frac{55}{30}$		3	M1	for two correct improper fractions
	e.g. $\frac{16^8}{5} \times \frac{11}{6^3}$ or $\frac{176}{30}$ or $\frac{5280}{900}$ oe			M1	correct cancelling or multiplication of numerators and denominators without cancelling
	e.g. $\frac{16}{5} \times \frac{11}{6} = \frac{176}{30} = \frac{88}{15} = 5\frac{13}{15}$ or $\frac{16}{5} \times \frac{11}{6} = \frac{176}{30} = 5\frac{26}{30} = 5\frac{13}{15}$ or $\frac{16^8}{5} \times \frac{11}{6^3} = \frac{88}{15} = 5\frac{13}{15}$ or $\frac{96}{30} \times \frac{55}{30} = \frac{5280}{900} = \frac{88}{15} = 5\frac{13}{15}$ NB: a student can show initially that $5\frac{13}{15} = \frac{88}{15}$ and they need to show that LHS = $\frac{88}{15}$	shown		A1	Dep on M2 for conclusion to $5\frac{13}{15}$ from correct working – either sight of the result of the multiplication e.g. $\frac{176}{30}$ must be seen and equated to $\frac{88}{15}$ or $5\frac{26}{30}$ or correct cancelling prior to the multiplication to $\frac{88}{15}$ NB: use of decimals scores no marks
Total 3 marks					

22	(d)	$\frac{6}{14}$		2	M1
			$\frac{3}{7}$		A1

23	(a)		$\frac{57}{100}$	1	B1 cao
	(b)		2	1	B1 cao
	(c)		$\frac{6}{7}$	1	B1 cao
	(d)		$4\frac{2}{5}$	1	B1 cao
	(e)		78	1	B1 cao
Total 5 marks					

24	e.g. $\frac{20}{24}$ and $\frac{9}{24}$ or $\frac{40}{48}$ and $\frac{18}{48}$ or $\frac{20n}{24n}$ and $\frac{9n}{24n}$			2	M1 for finding a common denominator with at least one fraction correct
	$\frac{20}{24} - \frac{9}{24} = \frac{11}{24}$ $\frac{40}{48} - \frac{18}{48} = \frac{22}{48} = \frac{11}{24}$ $\frac{20n}{24n} - \frac{9n}{24n} = \frac{11n}{24n} = \frac{11}{24}$	Shown		A1	dep on M1, for a complete correct method leading to $\frac{11}{24}$
Total 2 marks					

25	(a)	$0.3 \times 30 (= 9)$ or $\frac{1}{3} \times 30 (= 10)$ or $\frac{1}{3} + \frac{30}{100} (= \frac{19}{30})$ oe or $0.333\dots + 0.3 (= 0.63\dots)$ or $33.3\dots(\%) + 30(\%)$ oe $(= 63.3\dots)(\%)$ "9" and "10" or 19 shaded squares on diagram or $(1 - \frac{19}{30}) \times 30$ or $(1 - 0.63\dots) \times 30$		3	M1	Allow 9 squares clearly indicated for 30% or 10 squares clearly indicated for $\frac{1}{3}$
			11		M1	Allow squares with crosses or other indication of 'shading' such as 'y' or 'b'
					A1	
	(b)	eg 76% (25%) 7.66% (8%) 2.6% or (0.76) 0.25 (0.0766) 0.08 (0.026)		2	M1	All values written as % or all written as decimals or 4 values in correct order or all values in correct reverse order
			0.026, 0.0766, 8%, 25%, 0.76		A1	Any form
Total 5 marks						

26	(a)		$\frac{7}{10}$	1	B1	oe eg $\frac{70}{100}$
	(b)		15	1	B1	
	(c)	eg $35 \times 3 \div 5$ or 7×3 or $\frac{3}{5} \times 35$		2	M1	for a complete method
			21		A1	
Total 4 marks						

27		$\frac{8}{3} (+) \frac{15}{4}$ or $(2) \frac{8}{12} (+)(3) \frac{9}{12}$ or $(2) \frac{8a}{12a} (+)(3) \frac{9a}{12a}$ eg $\frac{8 \times 4 + 15 \times 3}{3 \times 4}$ or $\frac{32}{12} + \frac{45}{12}$ or $\frac{32a}{12a} + \frac{45a}{12a}$ or $2 \frac{8}{12} + 3 \frac{9}{12} = 5 \frac{17}{12}$ oe $\frac{32}{12} + \frac{45}{12} = \frac{77}{12} = 6 \frac{5}{12}$ or $5 \frac{17}{12} = 6 \frac{5}{12}$ or if shows $6 \frac{5}{12} = \frac{77}{12}$ at the beginning then show that the addition comes to $\frac{77}{12}$		3	M1	for correct improper fractions or fractional part of numbers written correctly over a common denominator
			Shown		M1	for correct fractions with a common denominator of 12 or a multiple of 12
						A1
Total 3 marks						

28		e.g. $\frac{4}{10}$ or 0.4 or 25% or 0.25		4	M1	for a correct conversion
		e.g. $1 - \frac{4}{10} = \frac{1}{4} (= \frac{7}{20})$ or $1 - "0.4" = "0.25" (= 0.35)$ or $100 - 40 = "25" (= 35)$			M1	for a complete method to find proportion of money spent on petrol
		e.g. "their $\frac{7}{20}$ ": 1 or "their 0.35": 1 or "their 35": 100			M1	for an equivalent ratio
			7 : 20		A1	cao SC M3 for 20 : 7
Total 4 marks						

29	(b)		0.29	1	B1	
	(c)		0.85	1	B1	

	(f)	$1 - \frac{3}{10} (= \frac{7}{10})$ oe or $\frac{3}{10} \times 400 (= 120)$ oe		2	M1	or use of $\frac{7}{10}$ eg $\frac{400}{10} \times 7$
			280		A1	Cao

30		$200 - 37 - 25 - 42 (= 96)$ oe eg $200 - "104" (= 96)$ or $\frac{37 + 25 + 42}{200} (= \frac{104}{200})$		3	M1	
		$\frac{96}{200}$ or $\frac{13}{25}$			M1ft	for a correct fraction, but not in lowest terms or for 0.48 or 48% or for cancelling their $\frac{104}{200}$ to simplest form (if their fraction cannot be cancelled then this mark is not awarded)
			$\frac{12}{25}$		A1	cao
Total 3 marks						

31	$\frac{16}{3} - \frac{20}{7}$ or $(5)\frac{7}{21} - (2)\frac{18}{21}$ or $(5)\frac{7a}{21a} - (2)\frac{18a}{21a}$		3	M1	for correct improper fractions or fractional part of numbers written correctly over a common denominator
	$\frac{112}{21} - \frac{60}{21}$ or $\frac{112a}{21a} - \frac{60a}{21a}$ or $5\frac{7}{21} - 2\frac{18}{21} = 3 - \frac{11}{21}$ oe or $5\frac{7}{21} - 2\frac{18}{21} = 4\frac{28}{21} - 2\frac{18}{21}$			M1	for correct fractions with a common denominator with minus sign or mixed numbers to the stage shown
	$\frac{112}{21} - \frac{60}{21} = \frac{52}{21} = 2\frac{10}{21}$ oe or $3 - \frac{11}{21} = 2\frac{10}{21}$ or $5\frac{7}{21} - 2\frac{18}{21} = 4\frac{28}{21} - 2\frac{18}{21} = 2\frac{10}{21}$	Shown		A1	Dep on M2 for a correct answer from fully correct working If all 3 fractions turned into improper fractions on the first line $\frac{16}{3} - \frac{20}{7} = \frac{52}{21}$ then the student clearly needs to show that the LHS $= \frac{52}{21}$
Total 3 marks					

32	$300 \div (7 + 5 + 3) (=20)$ clear correct use of $7 + 5 + 3 (=15)$ eg division at the end by 15 $\left(\frac{"2.8"+"1.8"}{15}\right)$ or correct use of 15 in a fraction eg $\frac{2}{5} \times \frac{7}{15}$		5	M1	(no mark for "15" unless it is used correctly) use of 7×20 or 140 or 5×20 or 100 in further work assumes this mark
	$\frac{2}{5} \times (7 \times "20") (=56)$ oe eg $0.4 \times 140 (=56)$ or $\frac{2}{5} \times 7 \left(= \frac{14}{5} = 2.8 \right)$ or eg $\frac{2}{5} \times \frac{7}{15} \left(= \frac{14}{75} = 0.186... \right)$			M1	finding $\frac{2}{5}$ of the number of birthday cards or $\frac{2}{5}$ of the share of 7 or $\frac{2}{5}$ of fraction of amount
	$0.36 \times (5 \times "20") (=36)$ or $0.36 \times 5 (=1.8)$ or eg $\frac{36}{100} \times \frac{5}{15} \left(= \frac{180}{1500} = 0.12 \right)$ oe			M1	finding 36% of anniversary cards Or 36% of the share of 5 or 36% of fraction of amount
	$\frac{"56"+"36"}{300}$ or eg $\left(\frac{"2.8"+"1.8"}{15}\right)$ or $\frac{14}{5} + \frac{9}{5}$ $\frac{"14"}{75} + \frac{180}{1500}$			M1	for any fraction from correct working that isn't simplified or 30.66.% or 0.3066...
	$\frac{23}{75}$		A1	cao	
Total 5 marks					

33	(b)		$\frac{7}{10}$	1	B1	oe
	(c)			2	M1	for $\frac{30}{48}$ oe
			$\frac{5}{8}$		A1	

	(e)	$1 - \left(\frac{1}{2} + \frac{2}{5}\right) \left(= \frac{1}{10} \right)$ oe		3	M1	for a method to find the remaining fraction of beads
		$3 \times "10"$ or $3 \div \frac{1}{10}$ oe			M1	
			30		A1	

34	(a)		64	1	B1	
	(b)		0.45	1	B1	
	(c)		$\frac{3}{8}$	1	B1	
	(d)		$2\frac{3}{4}$	1	B1	
	(e)		square	1	B1	
Total 5 marks						

35	(a)	21 : 48		2	M1 or 16 : 7 A1 cao
	(b)		$\frac{7}{15}$	1	B1 oe exact fraction
Total 3 marks					

36		eg $360 - (160 + 90) (= 110)$	eg $360 \times \frac{400}{160} (= 900)$ oe or $90 \times \frac{400}{160} (= 225)$ oe	3	M1 method to calculate angle for Sandeep or total number of votes or for number of votes for Anjali
		eg $\frac{400}{160} \times '110'$ oe	'900' - '225' - 400		M1 complete method to calculate number of votes for Sandeep
				275	A1
Total 3 marks					

37	(a)	eg $\frac{3}{8} \times \frac{32}{27}$ or $\frac{12}{32} \div \frac{27}{32}$		2	M1 Inverting $\frac{27}{32}$ and changing to multiply or writing both fractions with the same denominator.
		eg $\frac{3}{8} \times \frac{32}{27} = \frac{96}{216} = \frac{4}{9}$ or $\frac{12}{32} \div \frac{27}{32} = \frac{12}{27} = \frac{4}{9}$ or eg $\frac{3}{8} \times \frac{32}{27} = \frac{4}{9}$	Shown		A1 Conclusion to $\frac{4}{9}$ - either sight of the result of the multiplication eg $\frac{96}{216}$ or $\frac{48}{108}$ or $\frac{24}{54}$ must be seen or fully correct cancelling must be seen prior to multiplication NB use of decimals scores no marks.
	(b)	eg $\frac{40}{48} - \frac{18}{48}$ or $\frac{20}{24} - \frac{9}{24}$		2	M1 for correct fractions with a common denominator of 24 or a multiple of 24
		eg $\frac{40}{48} - \frac{18}{48} = \frac{22}{48} = \frac{11}{24}$ or $\frac{20}{24} - \frac{9}{24} = \frac{11}{24}$	Shown		A1 dep M1 for a correct answer from fully correct working.
Total 4 marks					

38	(c)		0.625	1	B1
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39	(a)		26	1	B1
	(b)	eg $\frac{30-12}{30} (= \frac{18}{30})$ oe		2	M1 for $\frac{18}{30}$ or other correct but unsimplified fraction or an answer of $\frac{2}{5}$
					A1
	(c)	eg $\frac{8}{18} + \frac{3}{18}$ or $\frac{24}{54} + \frac{9}{54}$ oe		2	M1 for two fractions with a correct common denominator with at least one numerator correct
		eg $\frac{8}{18} + \frac{3}{18} = \frac{11}{18}$ or $\frac{24}{54} + \frac{9}{54} = \frac{33}{54} = \frac{11}{18}$ oe			A1 dep on M1, for a complete correct method leading to $\frac{11}{18}$
Total 5 marks					

40		eg $\frac{2}{5} \times 150 (= 60)$ or eg $0.32 \times 150 (= 48)$		5	M1 for finding the number of small mugs or number of medium mugs
		eg $150 - "60" - "48" (= 42)$			M1 for finding the number of large mugs
		eg $"60" \times 8.50 + "48" \times 11.20 + "42" \times 14.20 (= 1644)$ or $510 + 537.6 + 596.4 (= 1644)$			M1 for working out the income, Profit = 504 implies M3
		eg $\frac{"1644"-1140}{1140} \times 100$ or $\frac{"1644"}{1140} \times 100 - 100$			M1 (indep) for a complete method to find the percentage profit for their total income (must be greater than 1140) An answer of 144 implies M4
				44	A1 44 or better (44.2105...)
Total 5 marks					

41	(a)		one triangle fully shaded	1	B1	or one quarter of the square shaded (ignoring diagonal lines).
	(b)		$\frac{3}{4}$	1	B1	oe
	(c)		$\frac{9}{10}$	1	B1	oe
Total 3 marks						

42	$\frac{3}{8} \times \frac{5}{6}$ oe eg $0.375 \div 6 \times 5$ Allow $0.375 \times 0.83 \dots$ oe	eg $\frac{3}{8} \times 48 = 18$ and eg $\frac{5}{6} \times 18 = 15$		3	M1	for showing intention to multiply the two given fractions or using a number of members that is a multiple of 48 to work out the number of right-handed children.
	eg $\frac{3}{8} \times \frac{5}{6} = \frac{15}{48}$ or $\frac{3}{8} \times \frac{5}{6}$ $0.375 \times 0.83 \dots = 0.31 \dots$	"15" "48"			M1	For an attempt to multiply fractions or Dividing their 15 by their 48
			$\frac{5}{16}$		A1	dep on M1
Total 3 marks						

43	eg $\frac{27}{4}$ and $\frac{18}{7}$			3	M1	Both fractions expressed as improper fractions.
	$\frac{27}{4} \times \frac{7}{18}$ oe or eg $\frac{189}{28} \div \frac{72}{28}$				M1	for both fractions expressed as equivalent fractions with denominators that are a common multiple of 4 and 7 (seeing this stage gains M2)
	eg $\frac{27}{4} \times \frac{7}{18} = \frac{189}{72} = \frac{21}{8} = 2\frac{5}{8}$ or $\frac{27}{4} \times \frac{7}{18} = \frac{189}{72} = 2\frac{45}{72} = 2\frac{5}{8}$ or $\frac{27^3}{4} \times \frac{7}{18^2} = \frac{21}{8} = 2\frac{5}{8}$ or $\frac{189}{28} \div \frac{72}{28} = \frac{189}{72} = 2\frac{45}{72} = 2\frac{5}{8}$ oe if the student clearly shows $2\frac{5}{8} = \frac{21}{8}$ then they only need to complete the LHS to $\frac{21}{8}$ (often done in 1 st line of working)	shown			A1	dep M2 conclusion to $2\frac{5}{8}$ from correct working – either sight of the result of the multiplication e.g. $\frac{189}{72}$ must be seen then cancelled or correct cancelling prior to the multiplication with $\frac{21}{8}$ seen. NB entire solution using decimals scores no marks.
Total 3 marks						

44	(c)		$3\frac{4}{9}$	1	B1	
	(d)	0.28 or $\frac{22}{25}$ or $\frac{7}{25} + 0.88$ oe		2	M1	
		<i>Correct answer scores full marks (unless from obvious incorrect working)</i>	0.58		A1	oe eg $\frac{29}{50}$

45	eg $\frac{1}{4} \times 200 (= 50)$ or $\frac{2}{5} \times 200 (= 80)$ OR $\frac{43}{200}$			4	M1	for a method to find the beads for Bernadette or Claudio OR Derek's beads as a fraction
	eg $\frac{1}{4} \times 200 (= 50)$ and $\frac{2}{5} \times 200 (= 80)$ OR $\frac{43}{200} + \frac{1}{4} + \frac{2}{5} (= \frac{173}{200})$				M1	for a method to find the beads for Bernadette and Claudio OR method to find the fraction of the 200 beads given away
	eg $200 - "50" - "80" - 43 (= 27)$ OR $1 - \frac{173}{200}$				M1	for a method to find the number of beads Asif has left OR $1 -$ the fraction of the 200 beads given away
	<i>Correct answer scores full marks (unless from obvious incorrect working)</i>		$\frac{27}{200}$		A1	cao
Total 4 marks						

46	eg $\frac{14}{3}$ and $\frac{11}{6}$		3	M1 for both mixed numbers expressed as improper fractions
	eg $\frac{14}{3} \times \frac{6}{11}$ or $\frac{28}{6} \div \frac{11}{6}$ or $\frac{28n}{6n} \div \frac{11n}{6n}$			M1 seeing this stage gains M2
	eg $\frac{14}{3} \times \frac{6}{11} = \frac{84}{33} = \frac{28}{11} = 2\frac{6}{11}$ or $\frac{14}{3} \times \frac{6}{11} = \frac{84}{33} = 2\frac{18}{33} = 2\frac{6}{11}$ or $\frac{14}{3^1} \times \frac{6^2}{11} = \frac{28}{11} = 2\frac{6}{11}$ or $\frac{14}{3} \div \frac{11}{6} = \frac{28}{6} \div \frac{11}{6} = \frac{28}{11} = 2\frac{6}{11}$ or correct working to $\frac{28}{11}$ and writing $2\frac{6}{11} = \frac{28}{11}$	Shown		A1 dep on M2 for conclusion to $2\frac{6}{11}$ from correct working – either sight of result of multiplication eg $\frac{84}{33}$ must be seen or correct cancelling to $\frac{28}{11}$ or complete method using division and common denominators
	<i>Working required</i>			Total 3 marks

47	$\frac{1}{4} \times 600 (= 150)$ oe or $\frac{3}{4} \times 600 (= 450)$ oe		4	M1
	“450” \times 13.60 (= 6120)			M1
	(7200 – “6120”) \div “150” or 1080 \div “150”			M1
	<i>Correct answer scores full marks (unless from obvious incorrect working)</i>	7.2(0)		A1 SC B2 for 11.46(666...)
				Total 4 marks

48 (a)	e.g. $\frac{21}{24} - \frac{10}{24}$ or $\frac{84}{96} - \frac{40}{96}$ or $\frac{21n}{24n} - \frac{10n}{24n}$		2	M1 for finding a common denominator of 24 or a multiple of 24 with at least one fraction correct
	e.g. $\frac{21}{24} - \frac{10}{24} = \frac{11}{24}$ $\frac{84}{96} - \frac{40}{96} = \frac{44}{96} = \frac{11}{24}$ or $\frac{21n}{24n} - \frac{10n}{24n} = \frac{11n}{24n} = \frac{11}{24}$	Shown		A1 dep on M1, for a complete method leading to $\frac{11}{24}$

49	eg $\frac{380+20}{2} (= 200)$ or $\frac{380-20}{2} (= 180)$ or $\frac{380}{2} + 10 (= 200)$ or $\frac{380}{2} - 10 (= 180)$		4	M1 For a correct method to find the number of students in the U6 or the L6
	$\frac{2}{5} \times n$ oe or (U6 Maths \Rightarrow) 72 or $0.32 \times m$ oe or (L6 Maths $=$) 64 [where n and m are positive numbers]			M1
	$\frac{2}{5} \times n + 0.32 \times m$ or 72 + 64			M1
	<i>Correct answer scores full marks (unless from obvious incorrect working)</i>	136		A1 cao
				Total 4 marks

50	$\frac{26}{7}, \frac{13}{8}$		3	M1 both fractions expressed as improper fractions, no need for \div or \times may be equivalent to those given eg $\frac{52}{14}$ or $\frac{26}{16}$ etc. A student could invert $\frac{13}{8}$ and show multiplication - as shown in the 2nd M1, this mark is then implied.
	$\frac{26}{7} \times \frac{8}{13}$ or eg $\frac{208}{56} \div \frac{91}{56}$			M1 or for both fractions expressed as equivalent fractions with denominators that are a common multiple of 7 and 8 eg $\frac{208}{56} \div \frac{91}{56}$
	eg $\frac{26}{7} \times \frac{8}{13} = \frac{208}{91} = \frac{16}{7} = 2\frac{2}{7}$ or $\frac{26}{7} \times \frac{8}{13} = \frac{208}{91} = 2\frac{26}{91} = 2\frac{2}{7}$ or $\frac{26^2}{7 \times 13^2} \times \frac{8}{13} = \frac{16}{7} = 2\frac{2}{7}$ or $\frac{26}{7} \div \frac{13}{8} = \frac{208}{56} \div \frac{91}{56} = \frac{208}{91} = \frac{16}{7} = 2\frac{2}{7}$ or correct working to $\frac{16}{7}$ and writing $2\frac{2}{7} = \frac{16}{7}$ <i>working required</i>	shown		A1 dep on M2 NB: use of decimals scores no marks (unless used as a check)
				Total 3 marks

51 (a)		16 squares shaded	1	B1 cao
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52	eg $\frac{21}{35}$ and $\frac{10}{35}$ or $\frac{21n}{35n}$ and $\frac{10n}{35n}$		2	M1 for finding a common denominator with at least one fraction correct
	$\frac{21}{35} + \frac{10}{35} = \frac{31}{35}$ $\frac{21n}{35n} + \frac{10n}{35n} = \frac{31n}{35n} = \frac{31}{35}$ <i>Working required</i>	Shown		A1 dep on M1, for a complete correct method leading to $\frac{31}{35}$
				Total 2 marks

53 (a)		$\frac{2}{3}$	1	B1 allow 0.67 or better
(b)		$\frac{4}{5}$ and $\frac{12}{15}$	1	B1
(c)		0.7	1	B1 allow 0.7(000...)
				Total 3 marks

54 (a)		12 of the 15 squares shaded	1	B1 cao
(b)		$\frac{3}{4}$	1	B1 cao
(c)		0.03	1	B1 cao
(d)		14	1	B1 cao
				Total 4 marks

55	eg $\frac{14}{3}$ and $\frac{6}{5}$		3	M1 both fractions expressed as improper fractions, no need for \div or \times may be equivalent to those given eg $\frac{70}{15}$ or $\frac{18}{15}$ etc. A student could invert $\frac{6}{5}$ and go straight to the 2nd M1, this mark is then implied.
	$\frac{14}{3} \times \frac{5}{6}$ oe or $\frac{70}{15} \div \frac{18}{15}$			M1 For inverting 2 nd fraction and showing intention to multiply or for both fractions expressed as correct equivalent fractions with the same denominator with intention to divide eg $\frac{70}{15} \div \frac{18}{15}$
	eg $\frac{14}{3} \times \frac{5}{6} = \frac{70}{18} = \frac{35}{9} = 3\frac{8}{9}$ or $\frac{14}{3} \times \frac{5}{6} = \frac{70}{18} = 3\frac{16}{18} = 3\frac{8}{9}$ or $\frac{14}{3} \times \frac{5}{6} = \frac{35}{9} = 3\frac{8}{9}$ or $\frac{14}{3} \div \frac{6}{5} = \frac{70}{15} \div \frac{18}{15} = \frac{70}{18} = \frac{35}{9} = 3\frac{8}{9}$ or correct working to $\frac{35}{9}$ and writing $3\frac{8}{9} = \frac{35}{9}$ (maybe earlier in working) working required	Shown		A1 Dep on M2 for conclusion to $3\frac{8}{9}$ from correct working – either sight of the result of the multiplication or division e.g. $\frac{70}{18}$ must be seen or correct cancelling prior to the multiplication to $\frac{35}{9}$ OR writing $3\frac{8}{9} = \frac{35}{9}$ (maybe on first line of working) and correct working as far as LHS = $\frac{35}{9}$ NB: marks are awarded for use of fractions not decimals (but allow a decimal check of answer)
				Total 3 marks