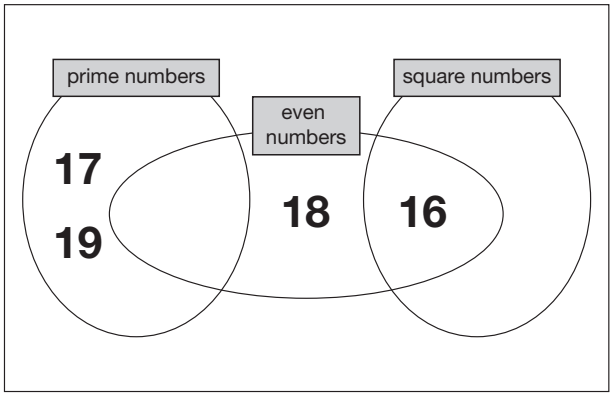
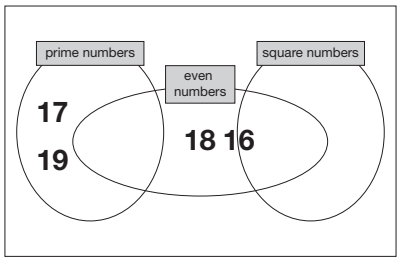
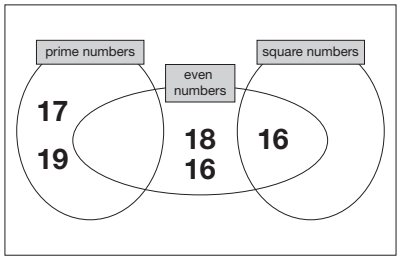
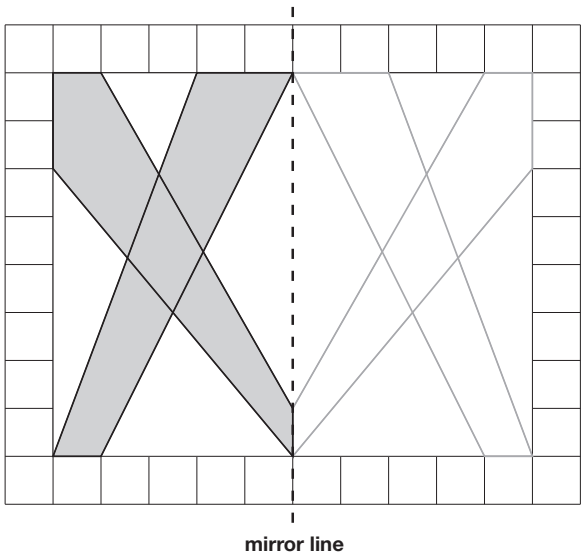
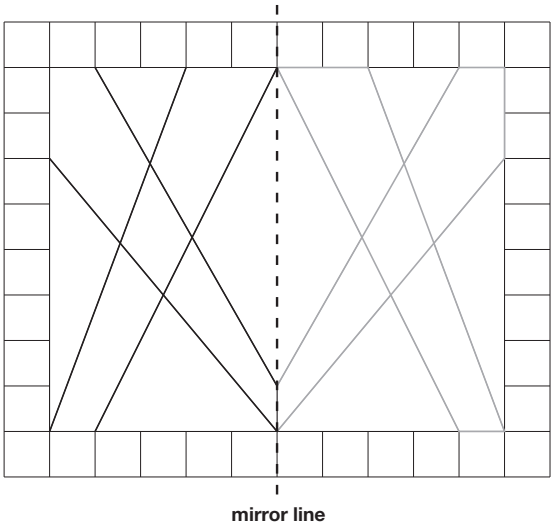
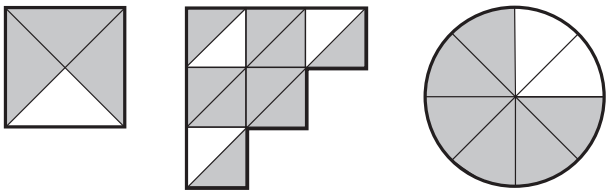
8. Mark schemes for Paper 2: reasoning

Qu.	Requirement	Mark	Additional guidance
1a	499	1m	
1b	555	1m	
2	Award **ONE** mark for the correct answer as shown: • **E** B C D A	1m	Accept: • £91,500 **B** £130,500 £131,500 £135,300
3	Award **TWO** marks for: 1 5 **1** + 4 **6** 4 **6** 1 5 If the answer is incorrect, award **ONE** mark for two digits correct.	Up to 2m	
4a	191,118	1m	
4b	48,361	1m	
5	Award **TWO** marks for all four numbers placed correctly as shown:  If the answer is incorrect, award **ONE** mark for three numbers placed correctly.	Up to 2m	Accept alternative unambiguous indications, e.g. lines drawn from the numbers to the appropriate regions of the diagram. **Do not** accept numbers written in more than one region, e.g.  **OR** 

Qu.	Requirement	Mark	Additional guidance
6	Diagram completed correctly as shown:  	1m	Accept inaccurate drawing, provided the intention is clear. Diagram need not be shaded. Diagram need not include edges drawn along the gridlines, e.g. 
7a 7b	$\frac{\boxed{2}}{3} = \frac{8}{12} = \frac{4}{\boxed{6}}$	1m 1m	
8	Numbers circled as shown: (0.05) 0.23 (0.2) 0.5	1m	Accept alternative unambiguous positive indications, e.g. numbers ticked or underlined.
9	Award **TWO** marks for the correct answer of 25p If the answer is incorrect, award **ONE** mark for evidence of an appropriate method, e.g. • 168 ÷ 2 = 84 109 – 84 **OR** • 168 ÷ 6 = 28 3 × 28 = 84 109 – 84	Up to 2m	Accept for **TWO** marks, an answer given in the acceptable notation (see page 10 for guidance). Answer need not be obtained for the award of **ONE** mark. Accept for **ONE** mark an answer of 0.25p **OR** £25p **OR** £25 as evidence of an appropriate method.

Qu.	Requirement	Mark	Additional guidance
10	Award **TWO** marks for all three diagrams completed to show three-quarters shaded, e.g.  If the answer is incorrect, award **ONE** mark for two diagrams correct.	**Up to 2m**	Accept alternative unambiguous indications of parts shaded.
11	Award **TWO** marks for the correct answer of 30 If the answer is incorrect, award **ONE** mark for evidence of an appropriate method, e.g. • 1.5 kg = 1,500 g 1,500 ÷ 50	**Up to 2m**	Answer need not be obtained for the award of **ONE** mark. Units must be converted correctly for the award of **ONE** mark.
12a **12b**	53 48	**1m** **1m**	
13	Award **TWO** marks for the correct answer of 119 If the answer is incorrect, award **ONE** mark for evidence of an appropriate method, e.g. • 140 ÷ 20 = 7 3 × 7 = 21 140 – 21 **OR** • 140 ÷ 20 = 7 20 – 3 = 17 17 × 7	**Up to 2m**	Answer need not be obtained for the award of **ONE** mark.

Qu.	Requirement	Mark	Additional guidance
14	24 **AND** 48 only	**1m**	Numbers may be given in either order.
15	Award **TWO** marks for the correct answer of 77 °F If the answer is incorrect, award **ONE** mark for evidence of an appropriate method, e.g. • 86 – 68 = 18 18 ÷ 2 = 9 9 + 68 **OR** • 86 – 68 = 18 18 ÷ 2 = 9 86 – 9 **OR** • 86 + 68 = 154 154 ÷ 2	**Up to 2m**	Answer need not be obtained for the award of **ONE** mark.
16a **16b**	9,999,995 5,900,000	**1m** **1m**	
17a **17b**	160 20	**1m** **1m**	If the answers to a and b are incorrect, award **ONE** mark if $a + b = 180°$ unless b is between 33° and 37° inclusive, or 90°
18	20	**1m**	

Qu.	Requirement	Mark	Additional guidance
19	Award **THREE** marks for the correct answer of £111.70 If the answer is incorrect, award **TWO** marks for: • sight of £90 **AND** £7.90 **AND** £13.80 as all multiplication steps completed correctly **OR** • evidence of an appropriate complete method with no more than one arithmetic error, e.g. $\begin{array}{r} 7.50 \\ \times \quad 12 \\ \hline 88.80 \end{array}$ *(error)* $\quad \begin{array}{r} 79 \\ \times \quad 10 \\ \hline 790 \end{array} \quad \begin{array}{r} 6.90 \\ \times \quad 2 \\ \hline 13.80 \end{array}$ 88.80 + 7.90 + 13.80 = 110.50 Award **ONE** mark for evidence of an appropriate complete method.	**Up to 3m**	Accept for **TWO** marks, sight of 9,000p **AND** 790p **AND** 1,380p as all multiplication steps completed correctly. Answer need not be obtained for the award of **ONE** mark. A misread of a number may affect the award of marks. No marks are awarded if there is more than one misread or if the mathematics is simplified. **TWO** marks will be awarded if an appropriate complete method with the misread number is followed through correctly. **ONE** mark will be awarded for: • all multiplication steps completed correctly with the misread number **OR** • evidence of an appropriate complete method with the misread number followed through correctly with no more than one arithmetic error.
20	(–10, –40)	**1m**	