Y9 Spring KAP P2 Mark Scheme

1	d^2	B1	Allow D^2
Additional Guidance			
	dd = d^2		B1
	dd or $1d^2$ or d2		B0

2	7/100	B1	

3	P	B1	

4	Valid response that indicates there is one (negative) answer missing	B1	eg –10 is also an answer or there is a negative value as well or square roots have two answers or answer is 10 and –10
Additional Guidance			
	–10 × –10 (= 100)		B1
	Another number can square to make 100 (implies exactly two)		B1
	She has forgotten the other value (implies exactly two)		B1
	There is another value it could be (implies exactly two)		B1
	It could be a different number (implies exactly two)		B1
	It could be negative (benefit of doubt: means 10 could be –10)		B1
	$–10^2$ (= 100) (condone missing brackets around –10)		B1
	$\pm\sqrt{100}$		B1
	Indication that there might be **more** than two possible values eg There are other possible numbers eg There could be other vaLUES eg Other numbers square to make 100 eg She hasn't included negatives		B0
	Repeating the question eg There is more than one possible value eg 10 is not the only possible value eg More than 1 number works		B0
	A partially correct statement eg x could be negative or decimal eg –10 × –10 = –100 eg x^2 = –10		B0

5	Correct net, all 6 faces	B3	Accept outline of net Ignore tabs B2 for 5 correct faces B1 for four 4×2 rectangles in correct position or two 2×2 squares in correct position

6	12	B1	

7	9 × 5 or 45 or 9 × 3 or 27 or 5 × 3 or 15	M1	May be multiplied by 2 Implied by 90 or 54 or 30 or 174

	9 × 5 × 2 or 90 **and** 9 × 3 × 2 + 5 × 3 × 2 or 54 +30 or 84 or 9 × 5 or 45 **and** 9 × 3 + 5 × 3 or 27 + 15 or 42	M1dep	Accept blue = 90 and (total =)174 Or green = 84 and (total =)174
	90 and 84 and yes Or 45 and 42 and yes	A1	Oe Condone incorrect units
Additional Guidance			
	Yes may be implied eg by blue is bigger		
	Ticking or circling blue without a comment does not imply yes		
	Allow M1 even if not subsequently used		
	Allow M1 even if seen among other calculations eg for perimeter or volume		
	Works out the area of a face and then uses this for the 'volume' eg 5 × 3 = 15, 15 × 9 = 135 or 5 × 3 = 15, 15 × 15 = 225		M1M0A0
	Only works out a 'volume' with correct or incorrect method eg 5 × 3 × 9 = 135 or 5 × 3 × 5 × 3 = 225		M0M0A0
	Ignore incorrect subtraction eg 90, 84 and Yes blue is 8 greater		M1M1A1
	90 + 54 + 30 = 174 (174 ÷ 2 = 87) 90 is more than half so Yes or 84 is less than half so Yes		M1M1A1
	Only 90 and 174 without identifying 90 as the blue area		M1M0A0

8	$\pi \times 3.5^2$	M1	oe
	38.4(8…) or 38.4(6…)	A1	Allow $\frac{49}{4}\pi$ or 12.25π or 12.3π
	38.5	B1ft	Ft their answer of 2dp or more

9	240	B1	

10	2d + 6	B2	B1 for 2d or (+)6 Do not ignore further work for B2
Additional Guidance			
	2d + 6 = 8d		B1

11a	1/18	B1	
11b	0	B1	

12	7/10, 0.705, 72% With no incorrect conversions	B2	Accept in any format eg 0.7, 0.705, 0.72 B1 correctly converts at least one to a different form which shows at least two in comparable form Eg 0.72 or 70.5(%) or 0.7 or 70(%) Or 72/100 and 70/100
Additional Guidance			

	Condone missing percentage signs	
	Do not award B2 with an incorrect conversion	
	72/100 and 705/1000 and 7/10 (not comparable conversions	B0

13	$\pi \times 40^2 \times 150$	M1	753982 or 240000π [753600, 754080]
	their 753982 ÷ 1000 or their 753982 ÷ 1000 ÷ 0.2	M1	753.982 or 240π [753.600, 754.080] 3770 [3768, 3770.4]
	their 3770 ÷ 60 (÷ 60) or (60 × 60 =) 3600 or 0.2 × 60 × 60 or 720	M1dep	62.83… or 1.04… [62.8, 62.84] or [1.40, 1.05]
	[62.8, 62.84] and Yes Or [1.04, 1.05] and Yes Or 3600 and 3770 and Yes Or 753.9 and 720 and Yes	A1	oe

14	40/360 → 2 Or 1 student = 20	M1	oe **Not** 20% = 1 student
	2 × 9 or 360 ÷ 20 or 18	M1	Calculating number failing first time
	their 18 ÷ 40 × 100 or 45 or 40% = their 18 or 20% = 9	M1	
	0.6 × their 45 Or 18 + 9	M1	
	27	A1	

15	360°	B1	

16	Alternative method 1		
	90 × 5 or 450 Or $\frac{72+83+88+97+x}{5}$ or $\frac{340+x}{5}$	M1	Oe Any letter or symbol
	90×5 – 72 – 83 – 88 – 97 or 90×5 – 340 or 72 + 83 + 88 + 97 + x = 90×5 or 340 + x = 90×5	M1dep	oe equations must have fraction eliminated
	110	A1	
	Alternative method 2		
	Trial of any value with mean correctly evaluated	M1	Also allow if given to the integer either side of a decimal answer Ignore trials with mean not evaluated or incorrectly evaluated
	Trial of 110 with mean evaluated to 90	M1dep	Implies M1M1
	110	A1	
	Alternative method 3		
	$\frac{72+83+88+97}{4}$ or $\frac{340}{4}$ or 85	M1	
	their 85 + 5×(90 – their 85) or their 85 + 5×5 or their 85 + 25	M1dep	Oe 90 + 4×(90-their 85)
	110	A1	
	Alternative method 4		
	$\frac{72+83+88+97}{5}$ or $\frac{340}{5}$ or 68	M1	

	5×(90 – their 68) or 5×22	M1dep	
	110	A1	
	Alternative method 5		
	(90 – 72) + (90 – 83) + (90 – 88) + (90 – 97) or 18 + 7 + 2 – 7 or 20	M1	oe
	90 + their 20	M1dep	
	110		

17a	Alternative method 1		
	6.4 × 4.5 (+) 4×2.3 or 4.5×2.4 (+) 4×6.8	M1	oe eg 28.8 (+) 9.2 or 10.8 (+) 27.2 Check work on diagram
	38	A1	SC1 28.8 and 9.2 or 10.8 and 27.2 or 5.4 and 5.4 and 27.2
	Alternative method 2		
	6.4×6.8 (-) 2.3×2.4	M1	oe eg 43.52 (-) 5.52 Check work on diagram
	38	A1	SC1 43.52 and 5.52
17b	π×1.7×1.7	M1	oe
	[9, 9.1] or 2.89π	A1	SC1 [2.268, 2.3]

18a	0.8	B1	
18b	2/6	B1	

19	Alternative method 1		
	72 ÷ 6 × 5 or 60	M1	oe 72 ÷ 6 × 11 or 132 implies M1
	72 × 1.5 or 108	M1	oe eg 72 × 3 ÷ 2 14 × 12 implies M2
	60 and 108 and 240 Or 250 – 60 – 108 = 82	A1	oe eg1 168 and 240 eg2 60 and 108 and 10 eg3 168 and (250 – 72 =) 178
	Alternative method 2		
	6 × 1.5 or 9	M1	oe eg1 6 × 3 ÷ 2 eg2 6 : 5 : 9
	72 ÷ 6 × 5 and 72 ÷ 6 × their 9	M1dep	oe eg 12 × 20 14 × 12 implies M2
	60 and 108 and 240 Or 250 – 60 – 108 = 82	A1	oe eg1 168 and 240 eg2 60 and 108 and 10 eg3 168 and (250 – 72 =) 178
Additional Guidance			
	Up to M2 may be awarded for correct work, with no or incorrect answer, even if this is seen amongst multiple attempts		
	In ALT1 the 2nd mark is not dependent In ALT2 the 2nd mark is dependent		
	240 alone or incorrect method		M0

20	$\frac{x}{3}$ = 12 + 9 or $\frac{x}{3}$ = 21 x – 9 × 3 = 12 × 3 or x – 27 = 36	M1	12 → +9 → ×3 Or (12 + 9) × 3
	63	A1	

Additional Guidance		
	12 + 9 × 3 = 39	M0A0

21	angle BCD = 60 or angle CBD = 60 or angle BDC = 60	M1	May be seen on diagram
	angle ABC = 120 or 180 – 20 – 120	M1	May be seen on diagram
	40	A1	

22	120000 × 1.05 or 126000	M1	oe eg 120000 + 0.05 × 120000 may be implied by eg 144000
	120000 × 1.05^4 or $\frac{583443}{4}$	M1dep	oe eg individual correct number of multiplications by 1.05
	145860(.75) or 145860.8(0) or 145861 or 145900 or 146000	A1	If no value given implied by M2 seen and 150000
	150000	B1ft	Ft any answer seen with >2sf Condone 150000.00

Additional Guidance		
	126000 × 1.05^3	M1M1
	Answer only 145860(.75) or 145860.8(0) or 145861 or 145900 or 146000	M1M1A1
	Answer only 150000	Zero
	For year on year working allow rounding/truncation if method shown for up to M2A0B1ft eg 126 × 1.05 = 132000 and 132000 × 1.05 = 138000 and 138000 × 1.05 = 144900 Answer 140000	M2A0B1ft
	12000, 126000, 132000, 138000, 144000 with no method shown does not imply truncation, this is just adding on 6000 each year	M1M0A0
	120000 + 4 × 0.05 × 120000 or 120000 + 0.2 × 120000 implies M1	
	Misreads can score up to M2A0B1ft	
	Treat calculating 5 years as a misread but otherwise the wrong number of years eg 120000 × 1.05^2 will score a maximum of M1M0A0B1ft	