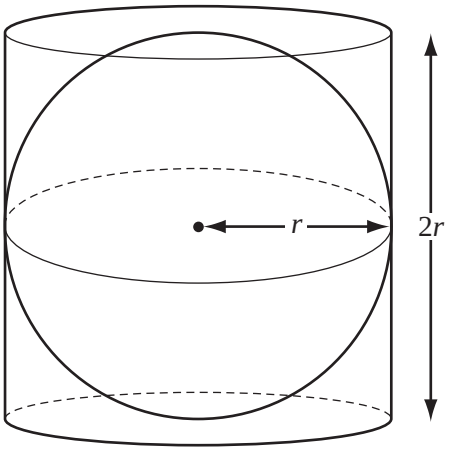
SMART EXAM RESOURCES
TOPIC : NUMBERS
SUB-TOPIC:APPLICATION OF PERCENTAGE
SET-1-QP-MS

1



NOT TO SCALE

The sphere of radius r fits exactly inside the cylinder of radius r and height $2r$.
Calculate the percentage of the cylinder occupied by the sphere.

[The volume, V, of a sphere with radius r is $V = \frac{4}{3}\pi r^3$.]

Answer ..... % [3]

MARK SCHEME:

$66\frac{2}{3}$ or 66.7 www	**3**	**M2** for $\frac{\frac{4}{3}\pi r^3}{\pi r^2(2r)}$ (× 100) or **M1** for $\pi r^2(2r)$

2 A group of 200 people were asked which city they would like to visit next.
The table shows the results.

City	London	Paris	New York	Tokyo
Number of people	50	48	56	46

(a) A person from the group is chosen at random.

Write down the probability that this person would like to visit either Paris or Tokyo next.

..... [2]

(b) Two people are chosen at random from the group of 200.

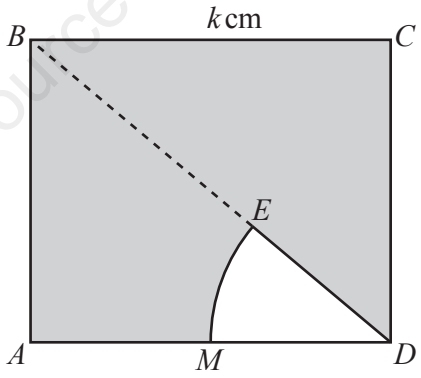
Find the probability that one person would like to visit London next and the other person would like to visit New York next.
Give your answer as a percentage.

..... % [3]

MARK SCHEME:

22(a)	$\frac{94}{200}$ oe	**2**	**M1** for $\frac{46}{200}+\frac{48}{200}$ oe
22(b)	14.1 or 14.07…	**3**	**M2** for $2\left(\frac{50}{200}\times\frac{56}{199}\right)$ oe or **M1** for $\frac{50}{200}\times\frac{56}{199}$ oe

3



NOT TO SCALE

The diagram shows a square $ABCD$ with side length k cm.
MDE is a sector of a circle, centre D.
E lies on the diagonal, BD, of the square.
M is the midpoint of AD.

Find the percentage of the square that is shaded.

..... % [4]

MARK SCHEME:

	90.2 or 90.18…	**4**	**B3** for 9.82[%] OR **M3** for $[100\times]\left(k^2-\frac{45}{360}\times\pi\times\left(\frac{k}{2}\right)^2\right)\div k^2$ oe or **M2** for $[100\times]\frac{45}{360}\times\pi\times\left(\frac{k}{2}\right)^2\div k^2$ oe or $k^2-\frac{45}{360}\times\pi\times\left(\frac{k}{2}\right)^2$ or $100\times(k^2-m\pi k^2)\div k^2$ or **M1** for $\frac{c}{360}\times\pi\times\left(\frac{k}{2}\right)^2$ oe or for $(k^2-m\pi k^2)\div k^2$ or for $100\times(k^2-mk^2)\div k^2$

4 The stem-and-leaf diagram shows the age, in years, of each of 15 women.

3	1	5	8	9			
4	1	1	2	3	5	6	9
5	0	2	3	8			

Key: 3 | 1 represents 31 years

Complete these statements.

The modal age is .....

The median age is .....

The percentage of women that are older than 51 years is ..... %. [3]

MARK SCHEME:

	41 43 20	**3**	**B1** for each