SMART EXAM RESOURCES
0580 EXTENDED MATH
TOPIC: NUMBERS
SUB-TOPIC: WRITING IN STANDARD FORM

SET-1-QP-MS

1 Javed says that his eyes will blink 415 000 000 times in 79 years.

(a) Write 415 000 000 in standard form.

Answer (a) .... [1]

MARK SCHEME:

	a) 4.15×10^8 final answer cao b) 10 cao	B1 B1		2

2 In 1950, the population of Switzerland was 4 714 900.
In 2000, the population was 7 087 000.

(a) Work out the percentage increase in the population from 1950 to 2000.

Answer (a).. % [2]

(b) **(i)** Write the 1950 population correct to 3 significant figures.

Answer (b)(i) .... [1]

(ii) Write the 2000 population in standard form.

Answer (b)(ii) .... [1]

MARK SCHEME:

15 (a)	50.3	2	M1 for $\frac{(7087000-4714900)}{4714900}$ o.e. must be recognisable complete correct method	
(b) (i)	4710000 or 4.71×10^6	1		
(ii)	7.087×10^6	1	accept 7.09×10^6, ignore superfluous zeros	4

3 The area of a small country is 78 133 square kilometres.

(a) Write this area correct to 1 significant figure.

Answer(a) .... km^2 [1]

(b) Write your answer to **part (a)** in standard form.

Answer(b) .... km^2 [1]

MARK SCHEME:

(a)	80000	1	8×10^4
(b)	8×10^4	1 √	

4 A block of cheese, of mass 8 kilograms, is cut by a machine into 500 equal slices.

(a) Calculate the mass of one slice of cheese in kilograms.

Answer (a) .... kg [1]

(b) Write your answer to **part (a)** in standard form.

Answer (b) kg [1]

MARK SCHEME:

	(a) **(b)**	0.016 1.6×10^{-2}	1 1√	Allow 2/125 x 10 essential

5 The planet Neptune is 4 496 000 000 kilometres from the Sun.
Write this distance in standard form.

Answer .... km [1]

MARK SCHEME:

	4.496×10^9	**1**	

6 **(a)** Use your calculator to work out

$$\frac{1-(\tan 40°)^2}{2(\tan 40°)}.$$

Answer(a) .... [1]

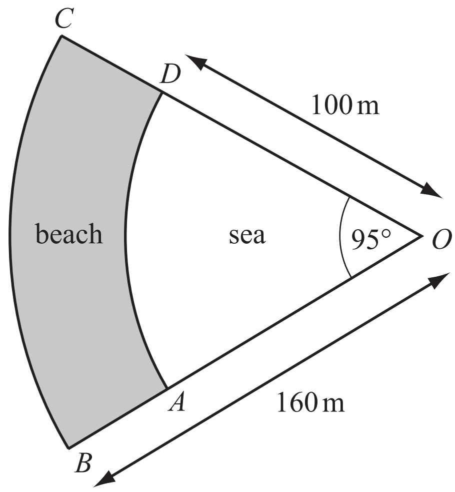
(b) Write your answer to **part (a)** in standard form.

Answer(b) [1]

MARK SCHEME:

(a) 0.176 (b) 1.76×10^{-1}	1 1√	ft their answer to (a)

7 The shaded area shows a beach.
AD and BC are circular arcs, centre O.
OB = 160 m, OD = 100 m and angle AOD = 95°.



(a) Calculate the area of the beach $ABCD$ in square metres.

Answer(a) .... m^2 [3]

(b) The beach area is covered in sand to a depth of 1.8 m.

Calculate the volume of the sand in cubic metres.

Answer(b) .... m^3 [1]

(c) Write both the following answers in standard form.

(i) Change your answer to **part(b)** into cubic **millimetres**.

Answer(c)(i) .... mm^3 [1]

(ii) Each grain of sand has a volume of 2 mm^3 correct to the nearest mm^3.

Calculate the maximum possible number of grains of sand on the beach.

Answer(c)(ii) [2]

MARK SCHEME:

(a) 12900	3	**M1** $(160^2$ **or** $100^2) \times \pi \times 95/360$ **M1** subtracting the two areas above
(b) 23300	1√	**(a)** multiplied by 1.8
(c) **(i)** 2.33×10^{13}	1√	**(b)** $\times 10^9$
(ii) 1.55×10^{13}	2√	**M1 (c)(i)** / 1.5

8 **(a)** There are 10^9 nanoseconds in 1 second.
Find the number of nanoseconds in 5 minutes, giving your answer in standard form.

Answer(a) .... [2]

MARK SCHEME:

(a)	3×10^{11}	2	**M1** $60 \times 5 \times 10^9$ or better

9 **(a)** There are 10^9 nanoseconds in 1 second.
Find the number of nanoseconds in 8 minutes, giving your answer in standard form.

Answer(a) .... [2]

MARK SCHEME:

(a)	3×10^{11}	2	**M1** $60 \times 5 \times 10^9$ or better

10 Calculate the value of $5(6 \times 10^3 + 400)$, giving your answer in standard form.

Answer .... [2]

MARK SCHEME:

	$3.2(0) \times 10^4$	2	**B1** 32000 or 32×10^3 etc

11 Change 64 square metres into square millimetres.
Give your answer in standard form.

Answer .... mm^2 [2]

MARK SCHEME:

	6.4×10^7	2	**M1** $64 \times 100^2 \times 10^2$ or 64 000 000 oe