

↳ 1.s.f

$$= \frac{600}{4^2 + 5}$$

$$= \frac{600}{16 + 5}$$

$$= \frac{600}{21}$$

$$= \frac{600}{20}$$

$$= \frac{60}{2}$$

$$= 30$$

Ami's answer is correct because it's closest to approximate value.

1. Work out $\frac{0.06 \times 0.0003}{0.01}$

Give your answer in standard form.

$$0.06 = 6 \times 10^{-2}$$

$$0.0003 = 3 \times 10^{-4}$$

$$0.01 = 1 \times 10^{-2}$$

$$= \frac{6 \times 10^{-2} \times 3 \times 10^{-4}}{1 \times 10^{-2}}$$

$$= \frac{18 \times 10^{-6}}{1 \times 10^{-2}}$$

Standard Form

$$x \times 10^n$$

where $x < 10$

$$= \frac{1.8 \times 10^{-5}}{1 \times 10^{-2}}$$

$$= 1.8 \times 10^{-3}$$

$$1.8 \times 10^{-3}$$

(Total for Question 1 is 3 marks)

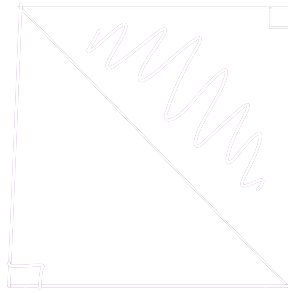
2. Work out $(13.8 \times 10^7) \times (5.4 \times 10^{-12})$
Give your answer as an ordinary number.

$$\begin{aligned} & (13.8 \times 10^7) \times (5.4 \times 10^{-12}) \\ &= 13.8 \times 5.4 \times 10^7 \times 10^{-12} \\ &= 74.52 \times 10^{-5} \\ &= 0.0007452 \end{aligned}$$

$$0.0007452$$

$$\dots 0.0007452 \dots$$

(Total for Question is 2 marks)



$$\begin{aligned}\Delta \text{ area} &= \frac{1}{2} \square \text{ area} \\ &= \frac{1}{2} \times AB \times BC \\ &= \frac{1}{2} \times 3x \times 3x\end{aligned}$$

Area of Δ - setting up an equation in x

$$3x \times 3x \times \frac{1}{2} = 162 \quad \textcircled{1}$$

$$\frac{9}{2} x^2 = 162$$

$$x^2 = \frac{162 \times 2}{9} \quad \textcircled{1}$$

$$x = \sqrt{36}$$

$$x = 6$$

x must be positive
as you can't have a negative length

6 1

3. Work out the value of

$$\frac{2.645 \times 10^9}{1.15 \times 10^3}$$

Give your answer in **standard form**. *Laws of Indices:*

$$\frac{2.645}{1.15} \times \frac{10^9}{10^3}$$

$$\frac{a^n}{a^m} = a^{n-m}$$

$$\uparrow$$

2.3

$$\uparrow$$

$\times 10^6$

\leftarrow (already in standard form)

$$2.3 \times 10^6$$

(Total for Question is 2 marks)

4. (a) Write 32 460 000 in standard form.

$$32\ 460\ 000.$$

$$3.246 \times 10^7$$

(value between 1 and 10) $\times 10^x$

$$\underline{3.246 \times 10^7}$$

(1) ✓

- (b) Write 4.96×10^{-3} as an ordinary number.

$$\begin{array}{r} 00004.96 \\ \hline = 0.00496 \end{array}$$

$$\underline{0.00496}$$

(1) ✓

Asma was asked to compare the following two numbers.

$$A = 6.212 \times 10^8 \quad \text{and} \quad B = 4.73 \times 10^9$$

She says,

“6.212 is bigger than 4.73 so A is bigger than B .”

- (c) Is Asma correct?

You must give a reason for your answer.

No, B is larger because the power of 10 is greater. ✓

(1)

(Total for Question is 3 marks)

	$n=1$	$n=2$	$n=3$	$n=4$	$n=5$	$n=6$	$n=7$
$2n^2-1$	1	7	17	31	49	71	97
$40-n^2$	39	36	31	24	15	4	-9

clear that
as these sequences
continue they
won't cross again

5. Work out $(3.42 \times 10^{-7}) \div (7.5 \times 10^{-6})$
Give your answer in standard form.

$$\frac{a^x}{a^y} = a^{x-y}$$

$$\frac{3.42 \times 10^{-7}}{7.5 \times 10^{-6}} = 0.456 \times \frac{10^{-7}}{10^{-6}} = 0.456 \times 10^{-7-(-6)} = 0.456 \times 10^{-7+6}$$

$$\textcircled{1} = 0.456 \times 10^{-1} = 4.56 \times 10^{-2}$$

$$\textcircled{1} 4.56 \times 10^{-2}$$

6. Write these numbers in order of size.
Start with the smallest number.

Standard form: $A \times 10^n$ ($1 \leq A < 10$)

$$6.72 \times 10^5$$

$$67.2 \times 10^{-4}$$

$$672 \times 10^4$$

$$0.000672$$

(3)

$$6.72 \times 10 \times 10^{-4}$$

$$6.72 \times 100 \times 10^4$$

$$6.72 \times 10^{-4}$$

$$6.72 \times 10^{-3}$$

$$6.72 \times 10^6$$

(1)

(2)

(4)

$$0.000672$$

$$67.2 \times 10^{-4}$$

$$6.72 \times 10^5$$

$$672 \times 10^4$$

(Total for Question is 2 marks)