≥ 1.5 ✓

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

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

$= \frac{600}{21}$

$= \frac{600}{20}$

$= \frac{60}{2}$

$= 30$

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

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

Give your answer in standard form.

Standard Form

$x \times 10^y$

where $x < 10$

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

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

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

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

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

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

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

1.8×10^{-3}

(Total for Question is 3 marks)

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

0.0007452

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

0.0007452

(Total for Question is 2 marks)

Δ area = $\frac{1}{2}$ × area

$= \frac{1}{2} \times AB \times BC$

$= \frac{1}{2} \times 3x \times 3x$

Area of Δ – setting up an equation in x

$3x \times 3x \times \frac{1}{2} = 162$ (1)

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

$x^2 = 162 \times 2$ (1)

$x = \sqrt{36}$ — x must be positive as you can't have a negative length

$x = 6$

6 (1)

3. Work out the value of $\dfrac{2.645 \times 10^9}{1.15 \times 10^3}$

Give your answer in standard form.

Laws of Indices: $\frac{a^n}{a^m} = a^{n-m}$

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

2.3×10^6 ← (already in standard form)

2.3×10^6

(Total for Question is 2 marks)

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

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

3.246×10^7

3.246×10^7 ✓

(1)

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

00004.96

$= 0.00496$

0.00496 ✓

(1)

Asma was asked to compare the following two numbers.

$A = 6.212 \times 10^8$ and $B = 4.73 \times 10^9$

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

③

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.

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

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

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

① ①

4.56×10^{-2}

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

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

6.72×10^5 67.2×10^{-4} 672×10^4 $0.000\,672$

(3)

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

6.72×10^{-3}

(2)

$6.72 \times 1000 \times 10^4$

6.72×10^6

(4)

6.72×10^{-4}

(1)

0.000672 67.2×10^{-4} 6.72×10^5 672×10^4

(Total for Question is 2 marks)