

C) #1 $1,000,000 = 10^6$ ← exponent
 6 zeroes

SHSAT #5
 Classwork

B) #2 340.567 in Scientific Notation
 ←
 3.40567×10^2 ← exponent
 2 places

C) #3 459.81×100
 2 places 2 places
 ↓ ↓
 $(4.5981 \times 10^2)(10^2)$
 $(4.5981)(10^4)$

C) #4 $\frac{(8.4 \times 10^8)}{(4 \times 10^6)} = \frac{8.4}{4} \times 10^{8-6} = (2.1)(10^2)$

C) #5 $80,023 \times 0.10$
 4 places 1 place
 $(8.0023 \times 10^4)(10^{-1})$
 $(8.0023)(10^{4-1}) = (8.0023)(10^3)$

E #6 $(720,563)(0.01)$
 5 places 2 places

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$$(7.20563)(10^5)(10^{-2})$$

$$(7.20563)(10^{5-2}) = (7.20563)(10^3)$$

B #7 $0.02718 = 2.718 \times 10^{-2}$
 2 places

D #8
$$\left. \begin{array}{l} 5.835 \times 10^4 \\ + 1.101 \times 10^4 \end{array} \right\} \text{same power } a^b$$

$$6.936 \times 10^4$$

A #9 $N = \sqrt{100-9} = \sqrt{91}$

$$\sqrt{81} < \sqrt{91} < \sqrt{100}$$

$$9 < \sqrt{91} < 10$$

We know perfect squares...

B #10
$$\begin{aligned} \sqrt{26} + 1.12345 &= \sqrt{64} + 1.12345 \\ &= 8 + 1.12345 \\ &= \boxed{9.12345} \end{aligned}$$

A) #11 $\left. \begin{array}{l} (3.4)(10^2) \\ + (3.4)(10^2) \end{array} \right\} \text{same power } (a^b)$
 $(6.8)(10^2)$

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B) #12 Multiple of 8? (Last 3 digits are $\div 8$)

- A) 1775 No. H's odd.
 B) 1872 Yes. $872/8 = 109$
 C) 1914 No. $914/8 = 114 \text{ R}2$
 D) 2002 No. $2/8 = 0 \text{ R}2$
 E) 2070 No. $70/8 = 8 \text{ R}6$

D) #13 $(2.54)(10^{-2})(3.81)(10^{-2})$
 $(2.54)(3.81)(10^{-2-2})$
 $(9.6794)(10^{-4})$

$$\begin{array}{r} 3.81 \\ \times 2.54 \\ \hline 1544 \\ 19050 \\ 76200 \\ \hline 9.6794 \end{array}$$

B) #14 $(0.4)^2 = (0.4)(0.4) = 0.16$

D) #15 $\left. \begin{array}{l} 1.224 \times 10^2 = 122.4 \\ - 5.98 \times 10^1 = -59.8 \end{array} \right\} \begin{array}{l} \checkmark \\ \checkmark \\ \hline 122.4 - 59.8 \\ \hline 62.6 \end{array}$

D #16 $(3.318 \times 10^5)(2.59 \times 10^2)$
 $(3.31)(2.59)(10^{5+2})$
 $(8.5729)(10^7)$

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A #17 $(8)(10^2)(8)(10^4)$
 $(8)(8)(10^{2+4})$
 $(64)(10^6)$
 $(6.4)(10^{6+1}) = (6.4)(10^7)$

C #18 $\overset{\text{Round up}}{\uparrow} (48.9)(21.2) \overset{\text{estimate}}{\downarrow}$
 $\downarrow \quad \downarrow \overset{\text{Round down}}{\downarrow}$
 $(50)(20) = (100)(10) = 1000 \text{ (estimated)}$

E #19 $n = \{-5, -4, -3, -2, -1, 0, 1, 2, 3\}$
 $n^2 = \{25, 16, 9, 4, 1, 0, 1, 4\}$
 $n^2 - 1 = \{24, 15, 8, 3, 0, -1, 0, 3\}$
 $\uparrow \quad \uparrow$
 Maximum Minimum

Range = $\{-1 \leq (n^2 - 1) \leq +24\}$

C #20

$$(2)(10^2)(2)(10^4) + (3)(10^5)$$

$$(4)(10^{2+4}) + 3(10^5)$$

$$4(10^6) + 3(10^5)$$

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$$\underbrace{4,000,000}_{6 \text{ zeros}} + \underbrace{300,000}_{5 \text{ zeros}} = 4,300,000 = \boxed{4.3 \times 10^6}$$

6 places

B #21

$$(1.2)(10^2) + (1.2)(10^3)$$

$$\underbrace{120}_{2 \text{ places}} + \underbrace{1200}_{3 \text{ places}} = \underbrace{1320}_{3 \text{ places}} = (1.32)(10^3)$$

A #22

$$(0.4)^{-2} \div (0.6)^{-2}$$

$$\left(\frac{2}{5}\right)^{-2} \div \left(\frac{3}{5}\right)^{-2}$$

$$\left(\frac{5}{2}\right)^2 \div \left(\frac{5}{3}\right)^2 = \left(\frac{25}{4}\right) \div \left(\frac{25}{9}\right) = \frac{9}{4} = \boxed{2.25}$$

B #23

$$(0.6)^{-2} \div (0.4)^{-2}$$

$$\left(\frac{3}{5}\right)^{-2} \div \left(\frac{2}{5}\right)^{-2}$$

$$\left(\frac{5}{3}\right)^2 \div \left(\frac{5}{2}\right)^2 = \frac{25}{9} \div \frac{25}{4} = \boxed{\frac{4}{9}}$$

B

#24

0.00000000005820177

11 zeros

Move 12 places = 5.820177×10^{-12}

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10

#25

$$\sqrt{(2)(1)(7)} = \sqrt{2} \sqrt{(7)(7)}$$

$$= (\sqrt{2})(\sqrt{49}) \approx \sqrt{100}$$

$$= (\sqrt{2})(7) \approx 9.89 = 10$$

-72

#26

$$-9 / |9-17| = -9(8) = -72$$

83

#27

Primes = (2 Digits) = ~~11, 13, 17, 19, 23~~

$$\text{Sum} \Rightarrow \{ 11 + 13 + 17 + 19 + 23 \} \text{ "First Five"}$$

$$\{ 30 + 30 + 23 = 83 \}$$

18

$$\textcircled{\#28} \quad yz + \sqrt{x} + yz - \sqrt{x}$$

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$$x=9$$

$$y=-9$$

$$z=-1$$

$$(-9)(-1) + (\sqrt{9}) + (-9)(-1) - (\sqrt{9})$$

$$9 + 3 + 9 - 3 = 18$$

117000

#29

$$10a + b$$

$$10(2.2)(10^3) + (9.5)(10^4)$$

$$(2.2)(10^{1+3}) + (9.5)(10^4)$$

$$(2.2+9.5)(10^4)$$

$$(11.7)(10^4) = (1.17)(10)(10^4)$$

$$= (1.17)(10^{1+4}) = (1.17)(10^5)$$

$$= 117,000$$

17

#30

Miriam

Charles

Now:

$$(C+11)$$

$$(C)$$

(+3yrs):

$$C+14$$

$$2(C+3)$$

"twice as old"

$$C+14 = 2C+6$$

$$C+8 = 2C$$

$$8 = C$$

→ Miriam is 19 now.

Miriam was 17.