

SHSAT #4  
Classwork

D #1  $\sqrt{225} + \sqrt{36} = 15 + 6 = \boxed{21}$

C #2  $2^5 - \sqrt{400} = 32 - 20 = \boxed{12}$

D #3  $\sqrt{\frac{32}{16}} = \sqrt{\frac{9}{16}} = \frac{\sqrt{9}}{\sqrt{16}} = \boxed{\frac{3}{4}}$

E #4  $\sqrt{81} = \sqrt{9} = \boxed{3}$

A #5  $\sqrt{36+49} = \sqrt{85} \Rightarrow$

$\sqrt{81}$	$\sqrt{100}$
↓	↓
$9 < \sqrt{85} < 10$	

B #6  $\sqrt{36} * \sqrt{9} + \sqrt{16} = (6 * 3) + 4 = 18 + 4 = \boxed{22}$

C #7  $\sqrt{36} + \sqrt{5} = 6 + \sqrt{5}$

$\sqrt{4}$	$\sqrt{5}$	$\sqrt{9}$
↓	↓	↓
$2 < \sqrt{5} < 3$		
	$2 < 2.3 < 3$	
	approx	

$= 6 + \boxed{2.3} = \boxed{8.3}$

A #8  $3^{2x} = \sqrt{81}$

$3^{2x} = 9$

$3^{2x} = 3^2$        $2x = 2$

$x = 1$

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$$\text{B } \textcircled{\#9} \quad (2\sqrt{8})(3\sqrt{2}) = (2 \times 3)(\sqrt{16}) = (6)(4) = \boxed{24}$$

$$\text{D } \textcircled{\#10} \quad \frac{\pi^2}{6} = \left(\frac{22}{7}\right)^2 \div \left(\frac{6}{1}\right) = \frac{22^2}{7^2} \times \frac{1}{6} = \frac{(22 \times 22)}{(49)(6)} = \frac{(22)(11)}{(49)(3)}$$

$$\boxed{1.6} = \frac{8}{5} = \frac{240}{150} \approx \frac{(242)}{(147)}$$

$$\text{D } \textcircled{\#11} \quad 14^2 - \sqrt{49} = 196 - 7 = 189$$

$$\text{B } \textcircled{\#12} \quad (3)(7) - 4 + 2(49) \div 14$$

$$21 - 4 + (98 \div 14) = 17 + 7 = \boxed{24}$$

$$\text{C } \textcircled{\#13} \quad n = 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \quad 7 \quad 8 \quad \boxed{9} \quad \boxed{11}$$

$$\sqrt{n^2} = \sqrt{1} \quad \sqrt{4} \quad \sqrt{9} \quad \sqrt{16} \quad \sqrt{25} \quad \sqrt{36} \quad \sqrt{49} \quad \sqrt{64} \quad \sqrt{81} \quad \sqrt{121}$$

$$\text{E } \textcircled{\#14} \quad \sqrt{20} \times \sqrt{80} = \sqrt{20 \times 80} = \sqrt{2 \times 8 \times 10 \times 10}$$

$$= \sqrt{16} \sqrt{100} = (4)(10) = \boxed{40}$$

$$\text{A } \textcircled{\#15} \quad (4\sqrt{6})(2\sqrt{2})(3\sqrt{3}) = (4 \times 2 \times 3)(\sqrt{6}\sqrt{2}\sqrt{3})$$

$$= (24)(\sqrt{36}) = 24(6) = \boxed{144}$$

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[E] #16  $(\sqrt{5} + \sqrt{5} + \sqrt{5}) = (3\sqrt{5})^2$   
 $= (3\sqrt{5})(3\sqrt{5}) = (9)(\sqrt{25}) = 45$

[A] #17  $(\sqrt{2} + \sqrt{2})^2 = (2\sqrt{2})(2\sqrt{2}) = (4)(\sqrt{4}) = 8$

[E] #18  $\sqrt{144 \cdot 10 \cdot 10} = \sqrt{144} \sqrt{100} = (12)(10) = 120$

[D] #19  $\sqrt{36^{64}}$

Square these ones.....

A)  $(6^8)^2 = 6^{16} \times$   
 B)  $(6^{32})^2 = 6^{64} \times$   
 C)  $(36^8)^2 = 36^{16} \times$   
 D)  $(36^{32})^2 = 36^{64} \checkmark$   
 E)  $(36^{64})^2 = 36^{128} \times$

[B] #20

$P = \sqrt{2 + \sqrt{10}} = \sqrt{2 + 3.1} = \sqrt{5.1}$  (3rd)

$Q = \sqrt{10 + \sqrt{5}} = \sqrt{10 + 1.4} = \sqrt{11.4}$  (1st)

$R = \sqrt{5 + \sqrt{5}} = \sqrt{5 + 2.3} = \sqrt{7.3}$  (2nd)

$P < R < Q$

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B #21  $\{-2, -1, 0, 1, 2, 3, 4\} = n$

$\{-8, -1, 0, 1, 8, 27, 64\} = n^3$

$-8 \leq n^3 \leq 64$

D #22  $(5x+4y) - (2x+8y) = 3x-4y$

$5x+4y-2x-8y =$

$(5x-2x) + (4y-8y) =$

C #23  $5835 \cdot 10^4 + 1123 \cdot 10^4$

$58,350 + 11,230$

D #24  $(\sqrt{81} - \sqrt{25}) * (6^2 - 2^5)$

$(9-5)(36-32) = (4)(4) = 16$

-2

#25

$$4|x-y| - 3|xy|$$

$$\begin{cases} x = -1 \\ y = 2 \end{cases}$$

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$$4|-1-2| - 3|(-1)(2)|$$

$$4|-7| - 3|-10|$$

$$4(7) - 3(10) = 28 - 30 = -2$$

1.5

#26

$$\frac{3x+3}{3} = 2.5 \rightarrow$$

$$3x+3 = 7.5$$

$$3x = 4.5$$

$$x = 1.5$$

168

#27

$$P = (8)(9)(7)(13) = (2)(2)(2)(3)(3)(7)(13)$$

$$S = (4)(6)(11)(49) = (2)(2)(2)(3)(11)(7)(7)$$

$$\text{GCF} = (2)(2)(2)(3)(7)$$

$$= (24)(7)$$

$$= 168$$

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48

#28

$$(16+5x) - (8-2y)$$

$$(16+5(10)) - (8-2(-5))$$

$$(16+50) - (8+10)$$

$$(66) - (18) = 48$$

$$\begin{cases} x=10 \\ y=-5 \end{cases}$$

4

#29

$$\frac{18}{N+2} = \text{Positive Integer when } \dots$$

$$\left\{ \frac{18}{1}, \frac{18}{2}, \frac{18}{3}, \frac{18}{6}, \frac{18}{9}, \frac{18}{18} \right\}$$

$$\downarrow \downarrow \downarrow \downarrow \downarrow \downarrow$$

$$N+2 = \{1, 2, 3, 6, 9, 18\} \quad \text{ONLY}$$

$$N = \{-1, 0, 1, 4, 7, 16\}$$

4 Positive Integers

24.5

#30

Joe + Kenneth + LINDA

$$(8.5) + (6.25) + (9.75)$$

$$(8.5) + (16) = 24.5 \text{ years of Life Experience}$$