

SHSAT
 Classwork #2

#1 $\frac{999}{90} = \frac{999}{9} = \boxed{111}$

#2 $\frac{1}{2} + \frac{1}{3} - \frac{1}{4}$
 $\frac{6}{12} + \frac{4}{12} - \frac{3}{12} = \frac{6+4-3}{12} = \boxed{\frac{7}{12}}$

#3 $4^3 + 16 + 2^3 + 2^3 + 32$
 $64 + 16 + 16 + 32$
 $64 + 64 = \boxed{128} = \boxed{2^7}$

#4 $(0.\bar{3}) \times (0.\bar{3}) = (\frac{1}{3}) (\frac{1}{3}) = (\frac{1}{9}) =$
 $9 \overline{) 1.00000}$
 $\underline{9}$
 10

#5 $\times 10 \times 11 = 110$
 $\times 14 \times 15 = 7 \times 30 = 210$
 $\sqrt{15 \times 16} = 30 \times 8 = \boxed{240}$

#6 $\frac{5}{9} =$
 $9 \overline{) 5.0000}$
 $\underline{45}$
 50

C #7 Cannot divide by zero.

B #8 $\frac{1}{7} = 0.142857\dots$

D #9 $| -3 - (-7) | + | -7 - (-3) |$
 $| +4 | + | -4 | = 4 + 4 = \boxed{8}$

C #10 $| 2 - 8 | - | 7 - 3 | = | -6 | - | 4 | = \boxed{2}$

B #11 $-3n + 7.50 = 28.02$
 $-3n = 20.52$
 $n = -6.84$

C #12

Friday $\begin{matrix} \nearrow +7 \text{ days} \rightarrow \boxed{\text{FRIDAY}} \\ \nearrow 14 \text{ days} \\ \nearrow 21 \text{ days} \\ \nearrow 28 \text{ days} \\ \nearrow 35 \text{ days} \\ \nearrow 42 \text{ days} \\ \nearrow 49 \text{ days} \\ \nearrow 56 \text{ days} \\ \nearrow 63 \text{ days} \\ \nearrow 70 \text{ days} \\ \nearrow 77 \text{ days} = \boxed{\text{FRIDAY}} \end{matrix}$

78 = SAT
 79 = SUN
 80 = Monday

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C #13 $-12 > 5$

False

Y

$$\frac{2}{5} > 0.6$$

$$0.4 > 0.6$$

False

Z

$$(0.5)^2 > 0.4$$

$$0.25 > 0.40$$

False

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E #14

$$\frac{13+17+y}{3} = \frac{8+14+3+3y}{4}$$

(Same set Average)

$$\frac{30+y}{3} \quad \text{vs} \quad \frac{25+3y}{4}$$

Cross Multiply

$$4(30+y) = 3(25+3y)$$

$$120+4y = 75+9y$$

$$45 = 5y$$

9=y

B #15

$$a - (a - b - c)$$

$$a - a + b + c = \mathbf{b + c}$$

B #16

Two digit & Even: $\{10, 12, 14, 16, 18\}$

$$\text{Average} = \frac{10+12+14+16+18}{5} = \frac{28+28+14}{5} = \mathbf{\frac{70}{5}}$$

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A #17 Estimate:

$$\frac{10}{61} \approx \frac{10}{60} = 0.\overline{1666}$$

$$\frac{10}{71} \approx \frac{10}{70} = \frac{1}{7} = 0.\overline{142857} \text{ (less)}$$

$$\frac{10}{81} \approx \frac{10}{80} = \frac{1}{8} = 0.\overline{125} \text{ (even less)}$$

$$\frac{10}{91} \approx \frac{1}{9} \text{ and } \frac{10}{101} \approx \frac{10}{100} = \frac{1}{10} \text{ (Both less)}$$

B #18

$$\frac{1}{5} - \frac{1}{6} = \left(\frac{1}{N}\right) \Rightarrow \frac{6}{30} - \frac{5}{30} = \left(\frac{1}{30}\right)$$

$N = 30$

D #19 Use Factors

$$x = (3)(3)(5)(5)(5)(7)(7)(7)(7)$$

$$y = (2)(2)(2)(3)(5)(5)$$

$$\text{Common}[x, y] = (3)(5)(5) = (3)(5)^2$$

#20

A) Let $y=4$ or a multiple of 4

A) $4/2 = 2$

B) $16+12+5 = 33$

C) $20+11 = 31$

D) $24-7 = 17$

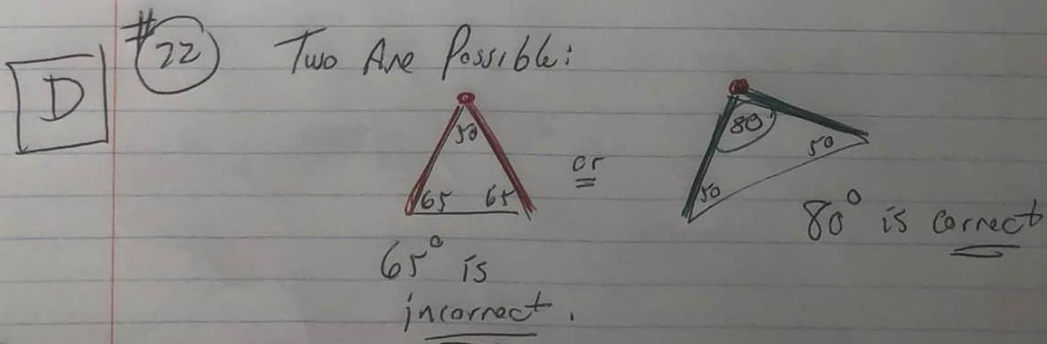
E) $5(4+3) = 35$

#21

A) Charlie (Now) = $8+2 = 10$.

Betty = $C+3 = 10+3 = 13$

Anne = $2B+5 = 26+5 = 31$



D #23 $p = \{2, 3, 5, \dots\}$ Try Plug In...

- | | |
|----------------------|--|
| A) $23(2) + 45 = 91$ | A $23(\text{ODD}) + 45 = \text{ODD} + \text{ODD} = \text{EVEN}$ |
| B) $23(2) + 46 = 92$ | $23(\text{ODD}) + 46 = \text{ODD}$ |
| C) $23(2) + 47 = 93$ | C $23(\text{ODD}) + 47 = \text{EVEN}$ |
| D) $23(2) + 48 = 94$ | $23(\text{ODD}) + 48 = \text{ODD}$ |
| E) $23(2) + 49 = 95$ | E $23(\text{ODD}) + 49 = \text{EVEN}$ |
- All are Composite!

EVEN...

ODD #

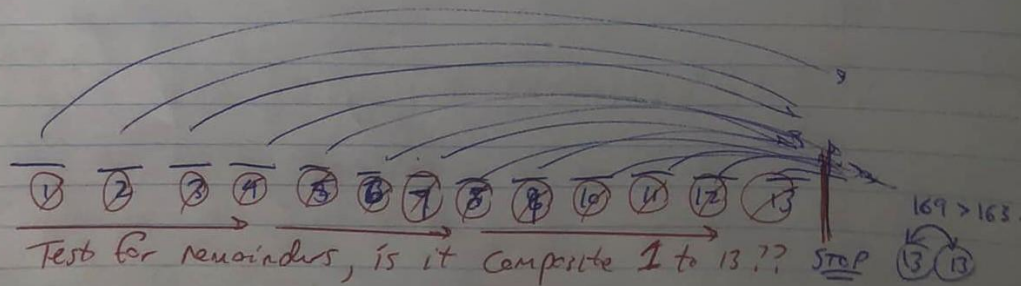
~~B~~ $23(p) + 46 = \underline{23}(p+2)$ (Multiple of 23)
Composite.

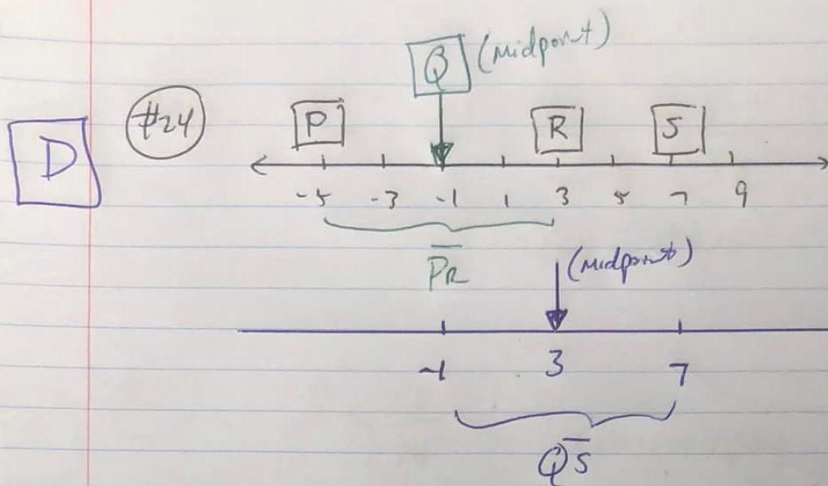
D) $23(p) + 49$ could be prime

ex: $23(3) + 48 = 69 + 48 = 117$ is composite.
(3×39)

ex: $23(5) + 48 = 115 + 48 = 163$ is prime!

How? Test.





6.875 (#25)

$$3\frac{1}{2} - \frac{23}{24} + 4\frac{1}{3} = \frac{7}{2} - \frac{23}{24} + \frac{13}{3}$$

$$= \frac{7(12)}{2(12)} - \frac{23}{24} + \frac{13(8)}{3(8)}$$

$$= \frac{84}{24} - \frac{23}{24} + \frac{104}{24}$$

$$= \frac{188 - 23}{24} = \frac{165}{24} = \boxed{6.875}$$

$$\begin{array}{r} 6.875 \\ 24 \overline{) 165.0000} \\ \underline{144} \\ 21.0 \\ \underline{192} \\ 180 \\ \underline{168} \\ 120 \\ \underline{120} \\ 0 \end{array}$$

84 (#26)

$$\text{LCM}[3, 7, 12] = (3)(7)(2)(2) = \boxed{84}$$

$$12 = (2)(2)(3)$$

336 (#27) $\frac{8!}{5!} = \frac{(8)(7)(6)(5)(4)(3)(2)(1)}{(5)(4)(3)(2)(1)}$ *Cancel factors*

$$= (8)(7)(6) = (56)(6) = \boxed{336}$$

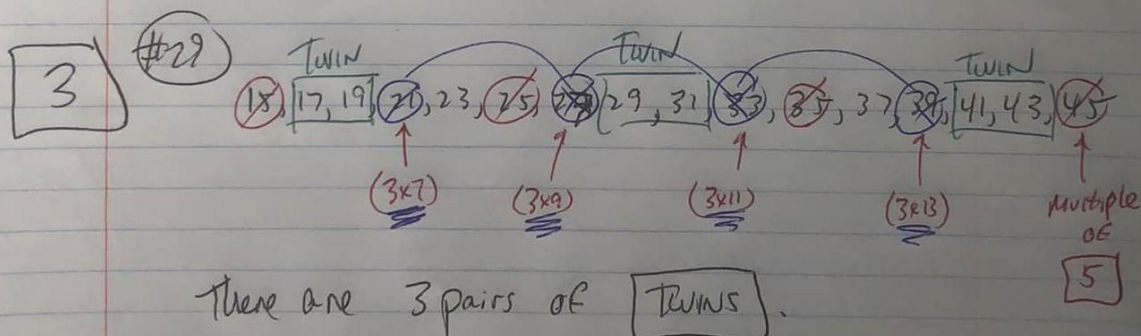
30 (#28) $\frac{3}{11} > \frac{8}{N}$ *Cross multiply*

$$3N > 88$$

$$N > \frac{88}{3}$$

$$N > 29\frac{1}{3}$$

$$N = \boxed{30}$$



4 (#30)

$$8^3 = 2^{2x+1}$$

$$(2^3)^3 = 2^{2x+1}$$

$$2^9 = 2^{2x+1}$$

$$9 = 2x+1$$

$$8 = 2x$$

$$4 = x$$