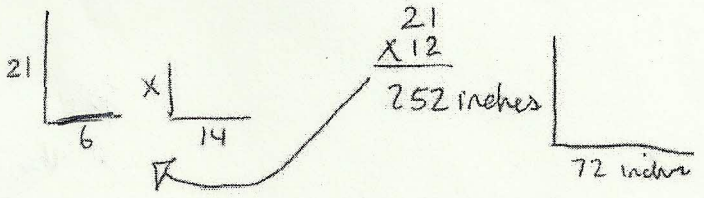
Grace Ying
Geometry-Up

① [C] $\sqrt{(-2-1)^2+(-1-3)^2} = \sqrt{9+16} = \sqrt{25} = 5$

② [A] geometric mean
$x^2 = (2)(32) = 64 \quad x = \sqrt{64} = 8$

arithmetic mean
$\frac{2+32}{2} = 17 \qquad 8+17 = 25$

③ [C]



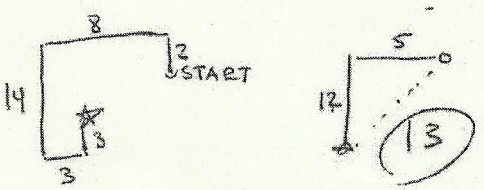
$\frac{72}{252} = \frac{14}{x} \qquad 72x = 14(252)$

$x = 49$ inches

④ [C] Converse of $p \to q$ is $q \to p$

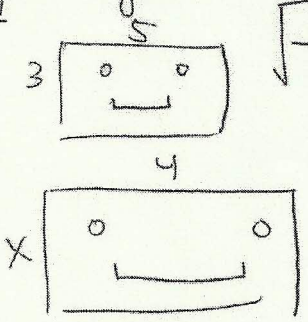
⑤ [C] 2

⑥ [B]



⑦ [A] Centroid

⑧ [B] Original

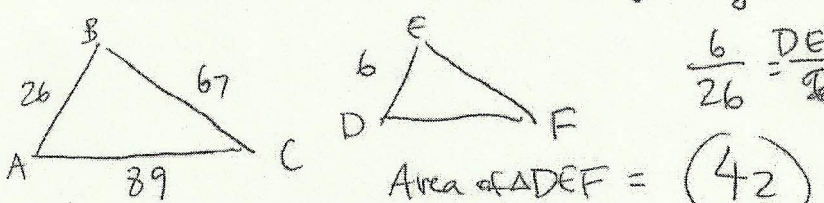


$\sqrt{\frac{15}{60}} = \sqrt{\frac{1}{4}} = \frac{1}{2} \qquad \frac{3}{x} = \frac{1}{2} \qquad \frac{5}{y} = \frac{1}{2}$

50 10

⑨ [D] $6+7 = 13$ Triangle Inequality Theorem

⑩ [B]

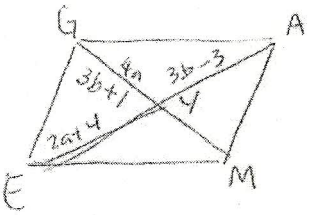


$\frac{6}{26} = \frac{DEF}{182}$

Area of $\triangle DEF$ = 42

(11) D SSS you use law of cosines

(12) D



$4a = 3b + 1$
$2a + 4 = 3b - 3$

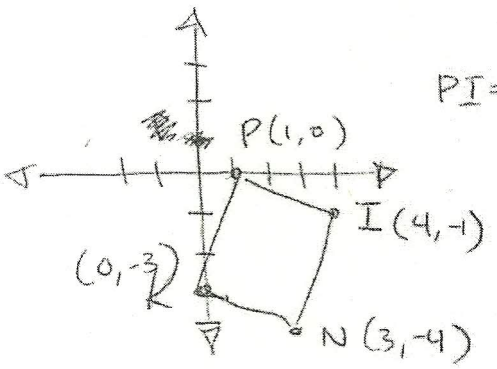
$4a - 3b = 1$
$-4a - 6b = 14$
$-3b = 15$
$b = 5$

$4a = 3(5) + 1$
$4a = 16$
$a = 4$

$4 + 5 = 9$

(13) D

(14) D



$PI = \sqrt{9+1} = \sqrt{10}$
$IN = \sqrt{9+1} = \sqrt{10}$
$NK = \sqrt{9+1} = \sqrt{10}$
$PK = \sqrt{9+1} = \sqrt{10}$

(15) B Exterior angles always add up to 360°

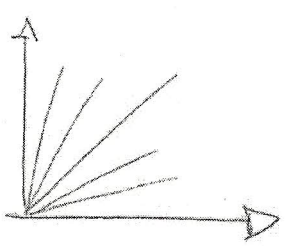
(16) C $\frac{\sqrt{64}}{\sqrt{25}} = \frac{8}{5}$ ← ratio $\quad \frac{8}{5} = \frac{x}{20} \quad x = 32$

(17) A $F + V = E + 2$

$36 + V = 88 + 2$

$V = 54$

(18) B



$90 \div 16 = 15$

$15 + 15 = 30$

it can't make 35

(19) C

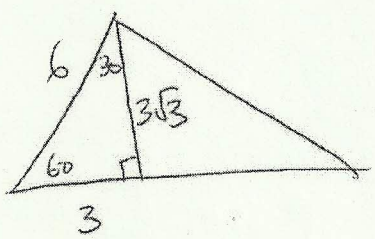
$120 - 60 = 60 \div 2 = 30$

$\angle LSE = 30$

(20) E 60 because it is an equilateral triangle

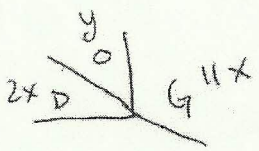
(21) B $\frac{4}{x} = \frac{x}{8}$ $x^2 = (\sqrt{32})^2$ $x = 4\sqrt{2}$

(22) B



$\frac{3}{3\sqrt{3}} = \frac{3\sqrt{3}}{x}$ $x = 9$ $3 + 9 = 12$

(23) B



$2x + y = 90$

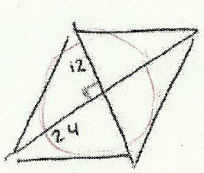
$-11x + y = 180$

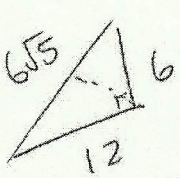
$9x = 90$

$x = 10$ $m\angle G = 110$

$m\angle O = 70$

(24) A





$(6)^2 + (12)^2 = (6\sqrt{5})^2$

$(6)(12) = 6\sqrt{5} \cdot r$

$r = \frac{12\sqrt{5}}{5}$

(25) C Heron's formula semiperimeter = 12

$\sqrt{12(6)(5)} = 6\sqrt{10}$

(26) [D] $\frac{4}{3}\pi r^3 = 4\pi r^2$ $\frac{4}{3}r = 4$ $r = 3$

$3 = r$

(27) [E] $\overline{AB} \cong \overline{AD} \cong \overline{AF}$

$x + 24 = 5x + 8$

$16 = 4x$

$x = 4$

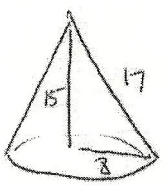
$5(4) + 8 = 28$

(28) [B] $x^2 - 6x + 9 + y^2 + 4y + 4 = 36$

$(x-3)^2 + (y+2)^2 = (6)^2$

$r = 6$

(29) [C] $\pi r^2 + \pi r l$



$\pi(8)^2 + (8)(17)\pi = 64\pi + 136\pi = 200\pi$

(30) [D] $\frac{1}{3}\pi rh - \frac{1}{3}\pi r^2 h = \frac{1}{3}\pi r^2 h$

$\frac{1}{3}(25)(10) = \frac{2}{3}\pi r^2 h \Rightarrow 125 = r^2 h$

$125 = \frac{h^3}{2}$ $h^3 = 250$ $h = 5\sqrt[3]{2}$

$\frac{r}{h} = \frac{1}{2}$ $r = \frac{h}{2}$

(similar triangles)