

Geometry Honors  
Nov. 2000

Mid-Term Practice Solutions

Ms. Chan's Review

① If a person is a Geometry Honors student, then he is smart.

② Hypothesis: I get an 'A'.  
Conclusion: I will be happy.

③ Converse: If I am happy, then I will get an A.

④ a)  $\frac{n(n+1)}{2}$    b)  $n(n+1)$    c)  $n^2$

⑤  $53 + 55 + 57 + \dots + 255 = ?$   
 $N^2 - n^2$     $N = \frac{255}{2} \approx 128$   
 $128^2 - 26^2$     $n = \frac{51}{2} \approx 26$   
 $= 16384 - 676$   
 $= 15,708$

⑥  $2 + 4 + 6 + \dots + 252 = ?$   
 $n(n+1)$     $n = \frac{252}{2} = 126^{\text{th}}$  term  
 $= 126(127)$   
 $= 16,002$

⑦  $80$  to  $100 = ?$     $N = 100$     $n = 79$   
 $\frac{N(N+1)}{2} - \frac{n(n+1)}{2}$   
 $= \frac{100(101)}{2} - \frac{79(80)}{2}$

⑪

|   |    |    |   |   |   |   |
|---|----|----|---|---|---|---|
| 1 | 2  | 3  | 4 | 5 | 6 | n |
| 0 | -1 | -1 | 0 | 2 | 5 |   |

Double:  
 $0 \quad -2 \quad -2 \quad 0 \quad 4 \quad 10$   
 $-3(0) \quad -2(1) \quad -1(2) \quad 0(3) \quad 1(4) \quad 2(5)$   
 $n^{\text{th}}$  term is:  $\frac{(n-1)(n-4)}{2}$

⑫

|   |    |    |    |    |    |   |
|---|----|----|----|----|----|---|
| 1 | 2  | 3  | 4  | 5  | 65 | n |
| 9 | 13 | 17 | 21 | 25 |    |   |

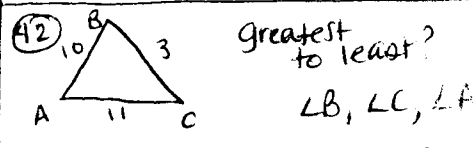
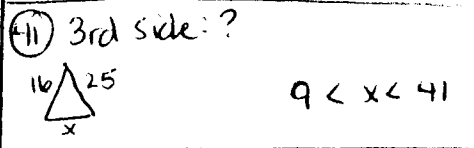
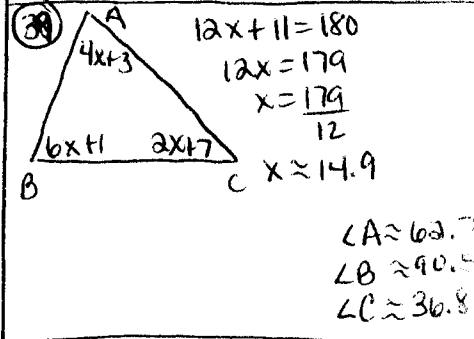
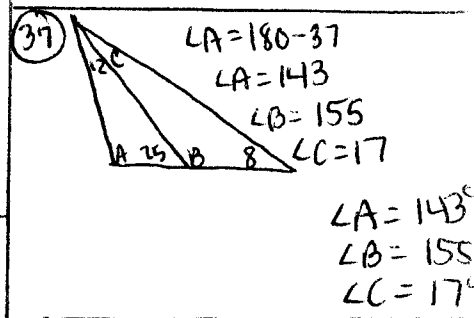
+4 +4 +4 +4  
 this is a linear equation!  
 $y = \frac{\Delta \text{value}}{\Delta \text{term}} x + \text{adjustment (if necessary)}$   
 $y = \frac{4}{1} x$     $y = 4x + 5$   
 65<sup>th</sup> term is:  
 $y = 4(65) + 4$   
 $y = 260 + 4$   
 $264$

⑬ # of people

|   |   |   |    |          |
|---|---|---|----|----------|
| 2 | 3 | 4 | 5  | n        |
| 2 | 3 | 6 | 10 | $n(n-1)$ |

2 way comb.  
 Double:    $2 \quad 6 \quad 12 \quad 20$   
 Factor:    $1(2) \quad 2(3) \quad 3(4) \quad 4(5)$   
 $280$  people:  $280(279) = 78,120$

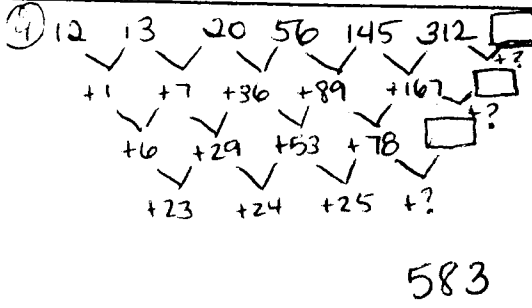
⑭ Total Diagonals from one vertex is  $n-3$   
 9



㉓  $\frac{1}{2}(16+34)$   
 $\frac{2}{2}(50)$   
 $\frac{1}{2}(50)$   
 25

⑦ 80 to 100 = ?  $N=100$   
 $n=79$   
 $\frac{N(N+1)}{2} - \frac{n(n+1)}{2}$   
 $= \frac{100(101)}{2} - \frac{79(80)}{2}$   
 $= 5050 - 3160$   
 $= 1890$

⑧ next term?  $24, 6, \frac{3}{2}, \frac{3}{8}$   
 pattern is to  $\div$  previous term by 4.  
 $\therefore$  next term is  $\frac{3}{32}$



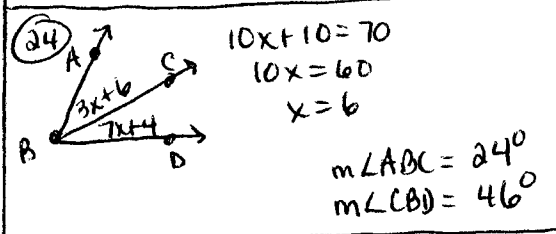
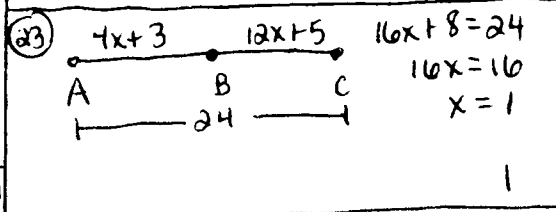
⑩

| Term  | 1 | 2              | 3  | 4              | 5  |
|-------|---|----------------|----|----------------|----|
| Value | 4 | $\frac{15}{2}$ | 12 | $\frac{35}{2}$ | 24 |

need to double the values!!  
 new factor: 2(4) 3(5) 4(6) 5(7) 6(8)  
 $\therefore$  the  $n^{\text{th}}$  term is:  $\frac{(n+1)(n+3)}{2}$   
 $\therefore$  the 50<sup>th</sup> term is:  $\frac{(50+1)(50+3)}{2}$   
 $= \frac{51(53)}{2}$   
 $= 1351.5$

⑭ Total Diagonals from one vertex is  $n-3$   
 $78, 120$   
 9

⑮-⑳  
 ⑳ & ㉑  $\angle 1 + \angle 2 = 180$   
 $54 + \angle 2 = 180$   
 $\angle 2 = ?$   
 $126^\circ$

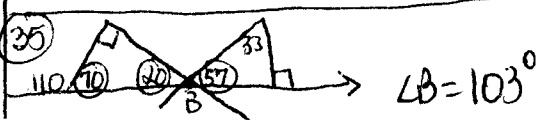


㉕-㉓) Constructions + defns.

㉓

$20x - 20 = 180$   
 $20x = 200$   
 $x = 10$   
 $3y + 16 = 121$   
 $3y = 105$   
 $y = 35$

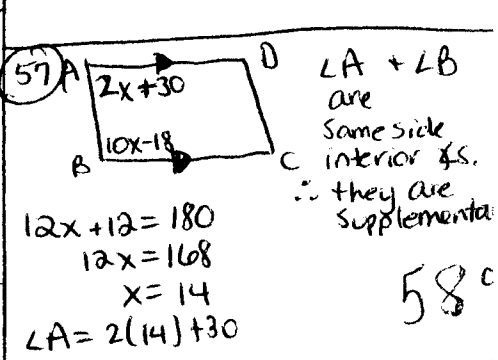
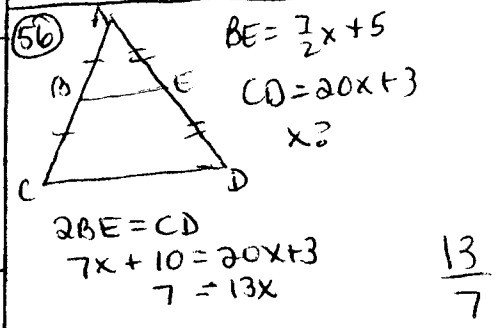
㉓) Parallel lines have equal slopes.  
 $\perp$  have opp. reciprocal slopes.  
 Their product is  $-1$ .



A  $\parallel$  C  $\angle B, \angle C, \dots$   
 ㉔  $\frac{1}{2}(16+34)$   
 $\frac{1}{2}(50)$   
 25

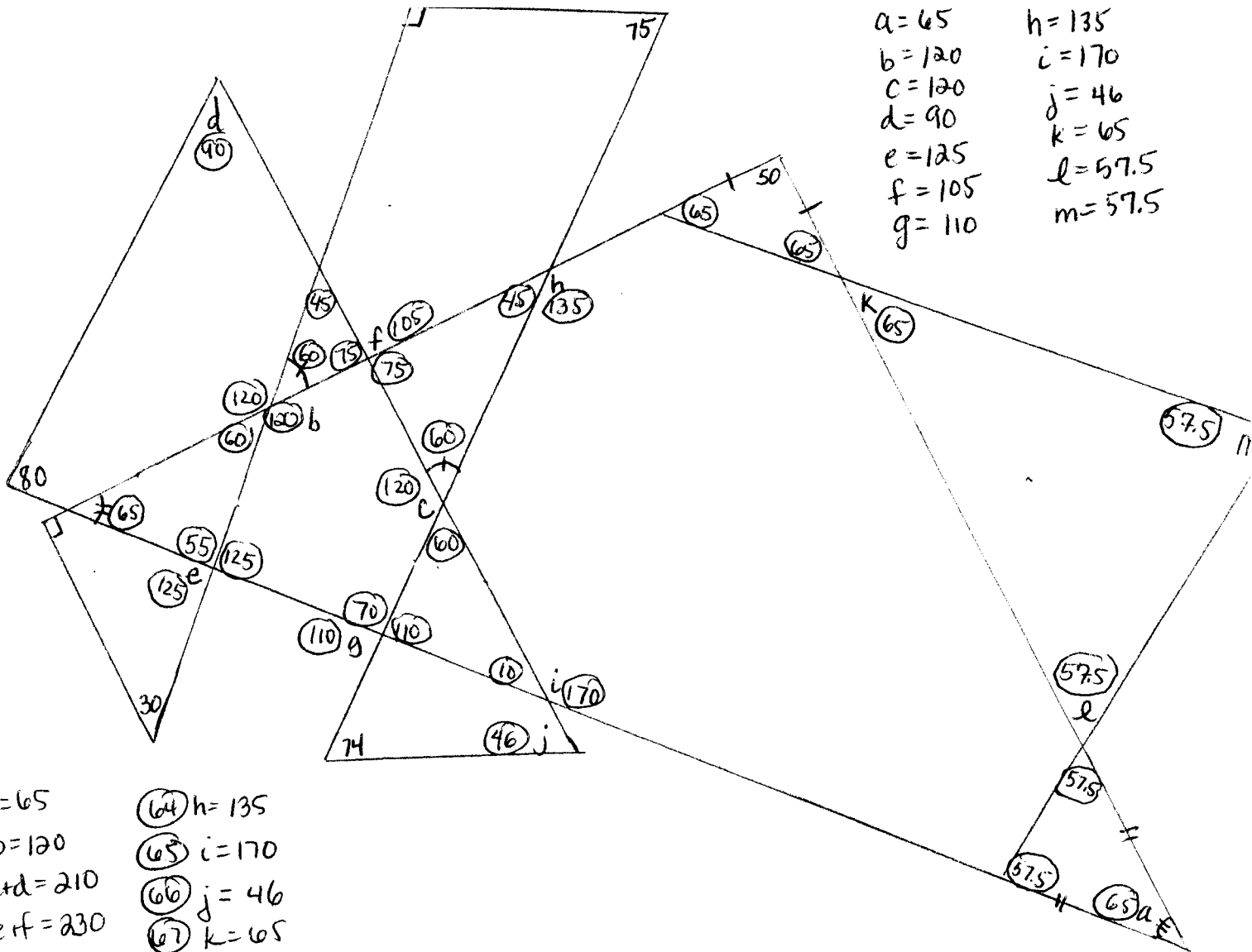
㉔  $\frac{180(n-2)}{n} = 174$   
 $180n - 360 = 174n$   
 $6n = 360$   
 $n = 60$   
 60

㉕  $\frac{360^\circ}{8} = 45^\circ$   
 45



㉘

Opp. sides of a  $\square \cong$   
 $3x - 5 = 8x + 5$   
 $-10 = 5x$   
 $x = -2$   
 $MA = 3(-2) - 5 = -11$   
 $HT = 8(-2) + 5 = -11$



$a = 65$        $h = 135$   
 $b = 120$       $i = 170$   
 $c = 120$       $j = 46$   
 $d = 90$        $k = 65$   
 $e = 125$       $l = 57.5$   
 $f = 105$       $m = 57.5$   
 $g = 110$

- (59)  $a = 65$
- (60)  $b = 120$
- (61)  $c + d = 210$
- (62)  $e + f = 230$
- (63)  $g = 110$
- (64)  $h = 135$
- (65)  $i = 170$
- (66)  $j = 46$
- (67)  $k = 65$
- (68)  $l + m = 115$

69

$\triangle ABD \cong \triangle CDB$   
b/c of SSS

70

What must be true in order for  $\triangle ABE \cong \triangle DCB$  by ASA?  
 $LE \cong LC$

71

$\triangle ABE \cong ?$   
 $\triangle CBD$

80

$X = \frac{1}{2} (\text{Big Arc} - \text{Small arc})$   
 $X = \frac{1}{2} (260 - 100)$   
 $X = \frac{1}{2} (160)$   
 $80^\circ$

81

radius = 20  
arc length  $\widehat{ABC} = ?$   
\*congruent chords intercept  $\cong$  arcs  
 $\widehat{AC} = 130^\circ$   $\widehat{BC} = 130^\circ$

arc length =  $\frac{a^\circ}{360} \cdot 2\pi r$   
 $= \frac{230}{360} \cdot 2\pi(20)$   
 $= \frac{23}{36} \cdot 40\pi$   
 $= \frac{23}{9} 10\pi = \frac{230\pi}{9}$

83

$m\widehat{AC} = ?$   
inscribed  $\angle = \frac{1}{2}$  intercepted arc  
 $70^\circ = \frac{1}{2} m\widehat{AC}$   
 $m\widehat{AC} = 140^\circ$

84

$m\widehat{AD} = 140$   
 $m\widehat{BC} = 40$   
 $m\angle X = ?$

$X^\circ = \text{average of intercepted arcs}$   
 $X = \frac{1}{2} m\widehat{AB} + m\widehat{DC}$   
 $X = \frac{1}{2} (180)$   
 $X = 90^\circ$   
 $90^\circ$

85

$m\angle OBA = 50^\circ$   
 $m\widehat{ACB} = ?$

Since  $\triangle AOB$  is isos. b/c  $\overline{AO} \cong \overline{BO}$  since all radii are  $\cong$   
 $\angle AOB = 80^\circ$   
 $\therefore \widehat{AB} = 80^\circ$   
 $\therefore \widehat{ACB} = 280^\circ$   
 $280^\circ$