계산시 참고사항

1. 이등변삼각형에서 각의 크기 구하기
1) 이등변삼각형의 두 밑각의 크기가 같은 성질을 이용한다.

2. 오목한 부분이 있는 다각형에서 각의 크기 구하기
1) 보조선을 그어 n각형을 만든다.
2) n각형의 내각의 크기의 합을 이용하여 각의 크기를 구한다.

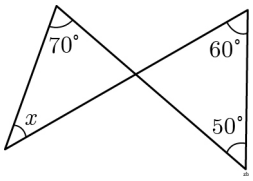
3. 별 모양의 도형에서 각의 크기 구하기
1) 삼각형의 내각의 크기의 합은 180°임을 이용한다.
2) 오각형의 내각의 크기의 합은 540°임을 이용한다.

참고
◉ 맞꼭지각의 크기는 항상 같다.

삼각형에서 각의 크기 구하기

◪ 다음 그림에서 $\angle x$의 크기를 구하여라.

1.



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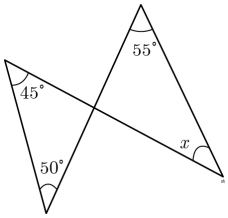

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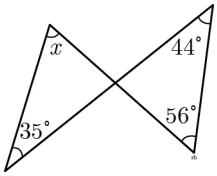

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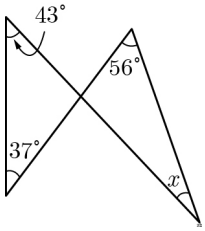

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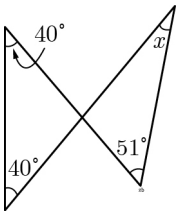

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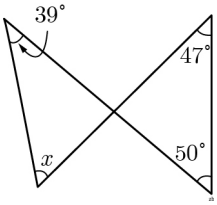

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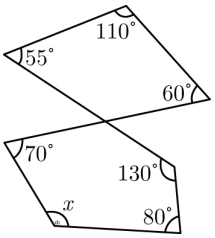

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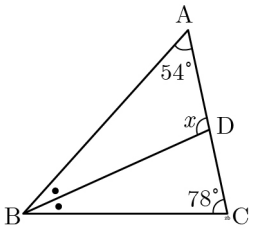

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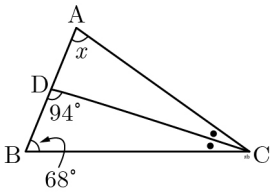

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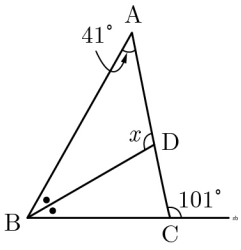

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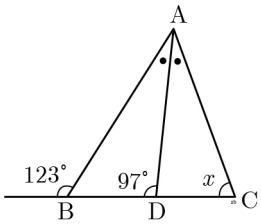

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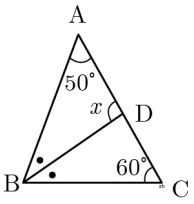

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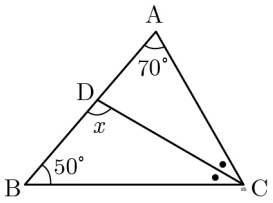

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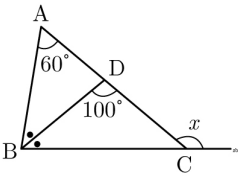

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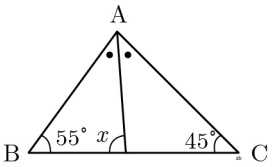

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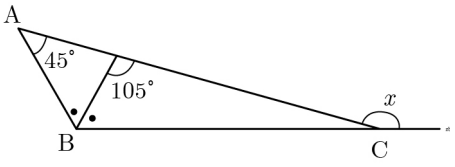

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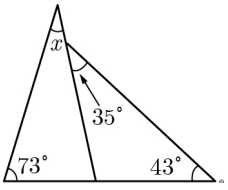

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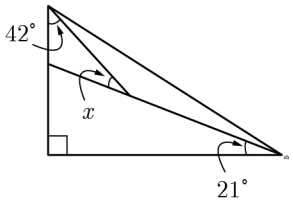

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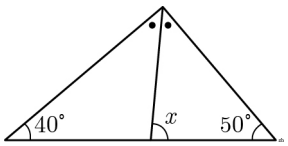

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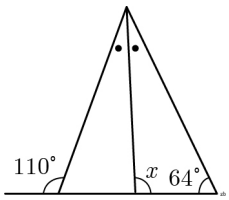

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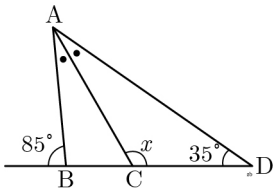
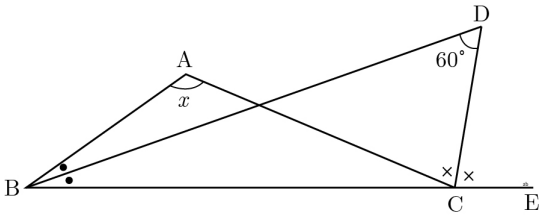


◪ 다음 그림에서 $\angle x$의 크기를 구하여라.

22.



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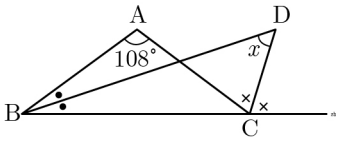

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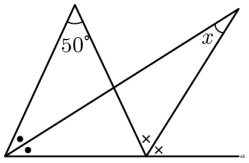

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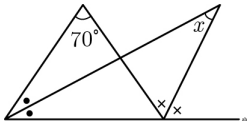

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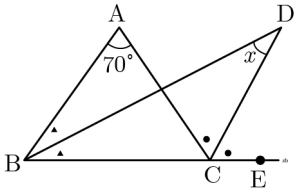

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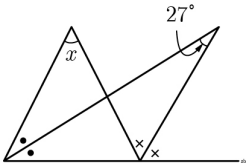

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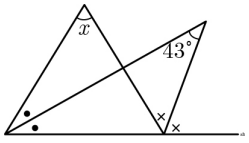

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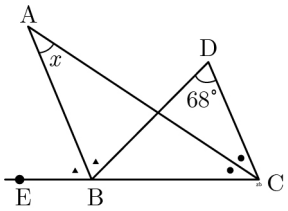

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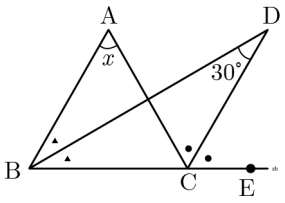
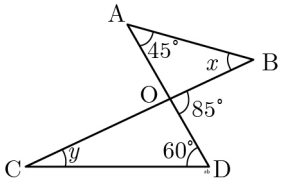


◪ 다음 그림에서 $\angle x$, $\angle y$의 크기를 구하여라.

31.



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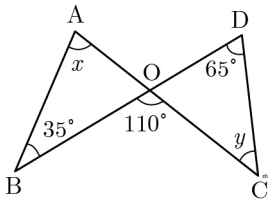

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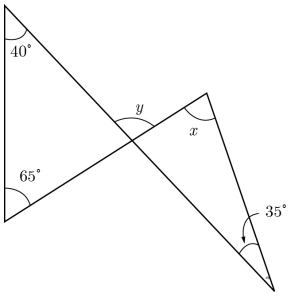

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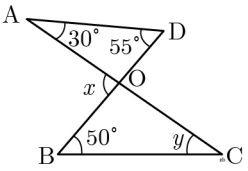

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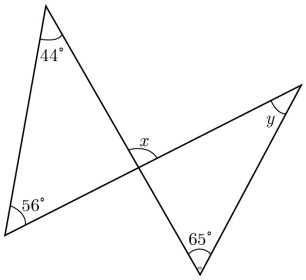
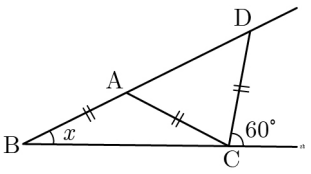


이등변삼각형에서 각의 크기 구하기

◪ 다음 그림에서 $\angle x$의 크기를 구하여라.

36.



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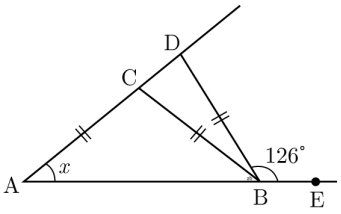

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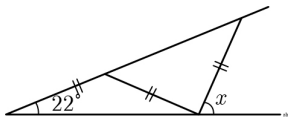

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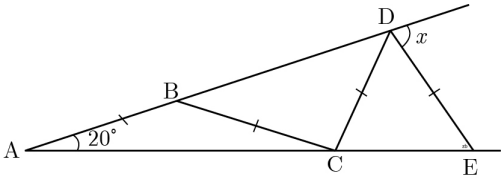

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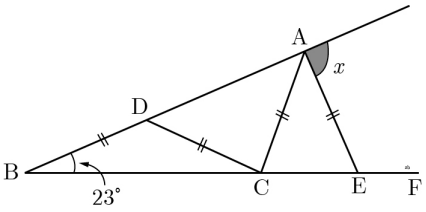

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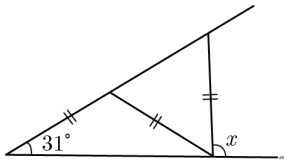

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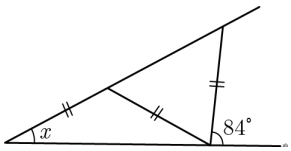

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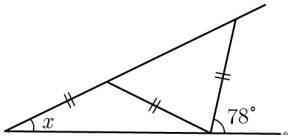

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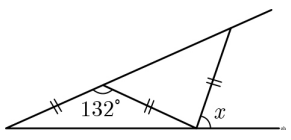

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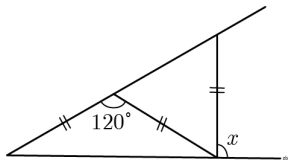

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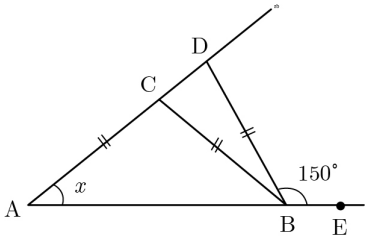

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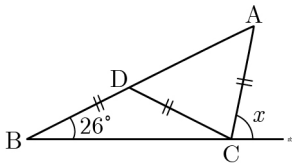

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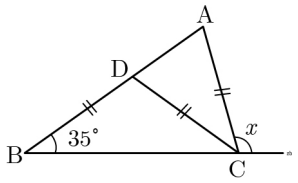
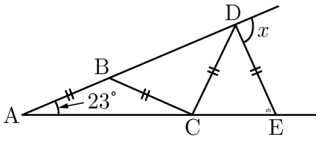
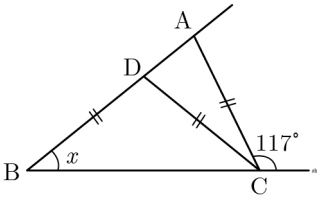


49.



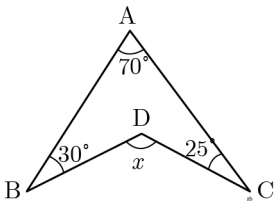
50.



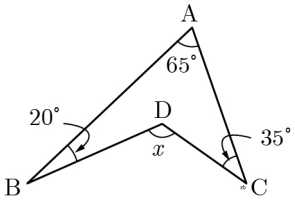
오목한 부분이 있을 때

◪ 다음 그림에서 $\angle x$의 크기를 구하여라.

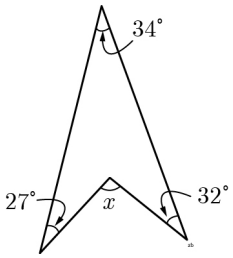
51.



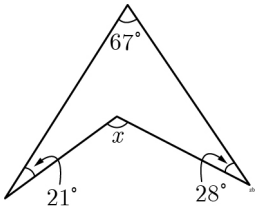
52.



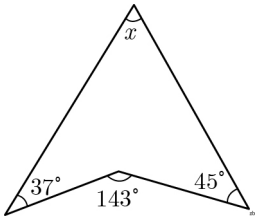
53.



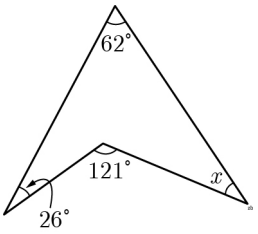
54.



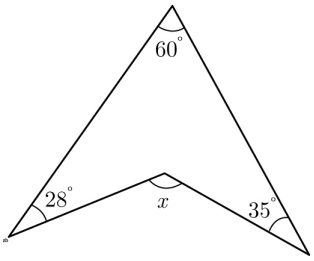
55.



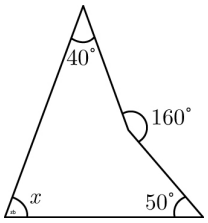
56.



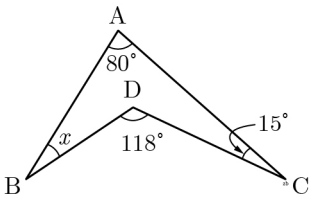
57.



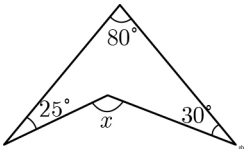
58.



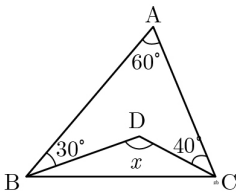
59.



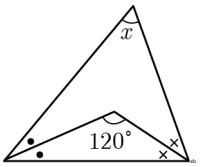
60.



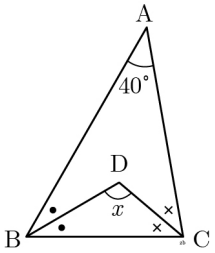
61.



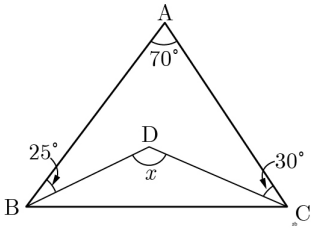
62.



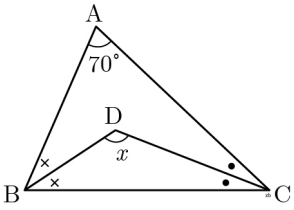
63.



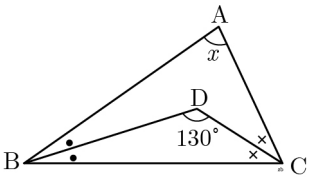
64.



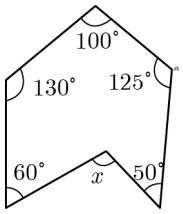
65.



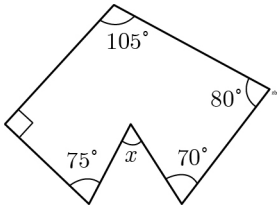
66.



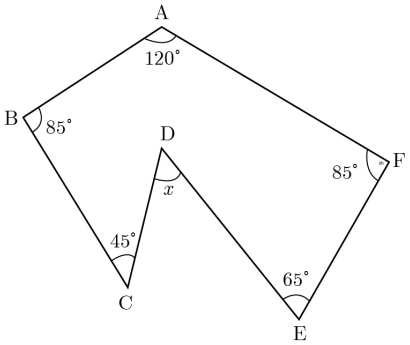
67.



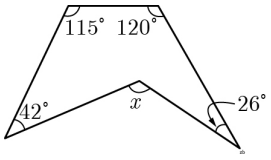
68.



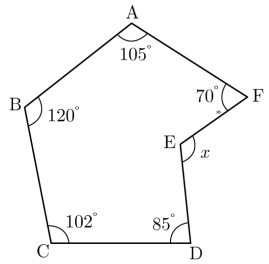
69.



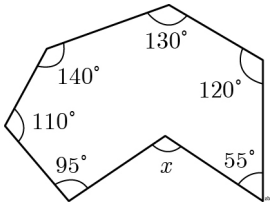
70.



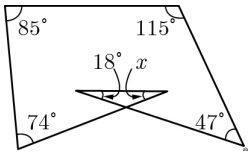
71.



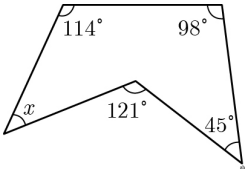
72.



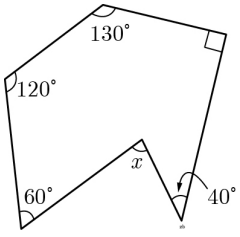
73.



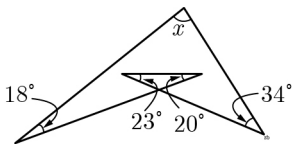
74.



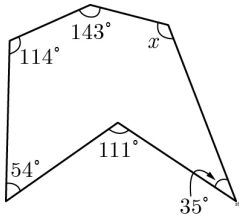
75.



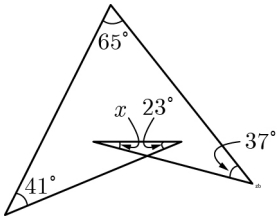
76.



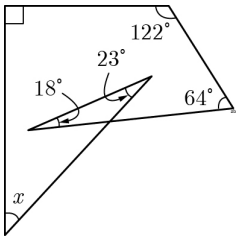
77.



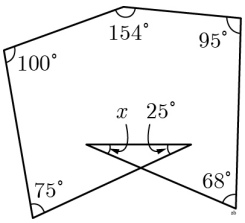
78.



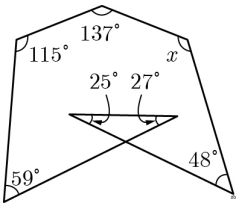
79.



80.

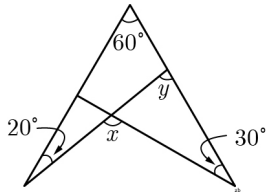


81.

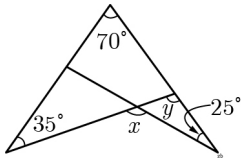


◪ 다음 그림에서 $\angle x$, $\angle y$의 크기를 각각 구하여라.

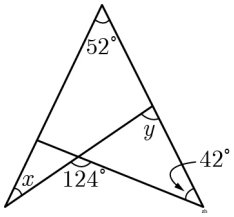
82.



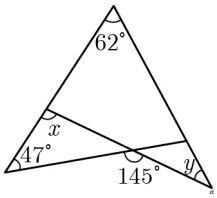
83.



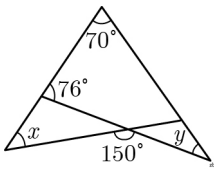
84.



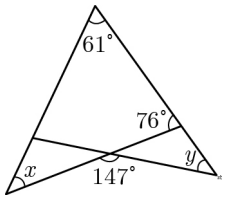
85.



86.



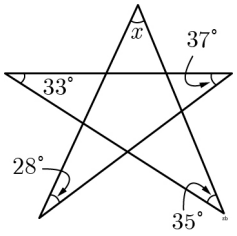
87.



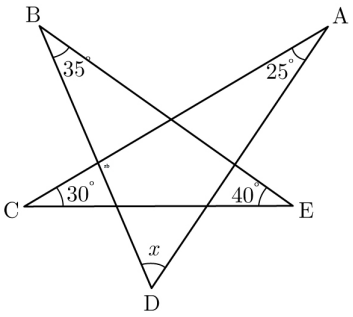
기타

◪ 다음 그림에서 $\angle x$의 크기를 구하여라.

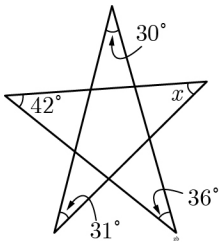
88.



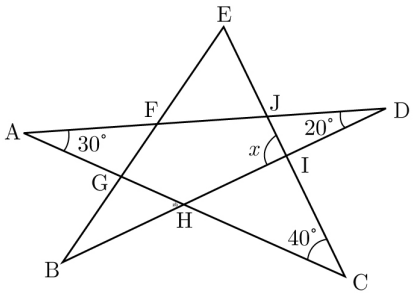
89.



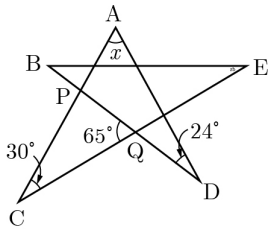
90.



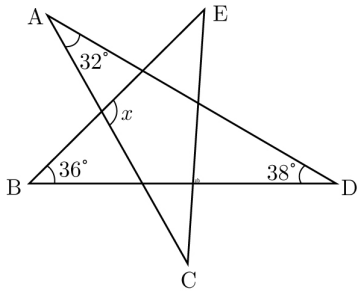
91.



92.

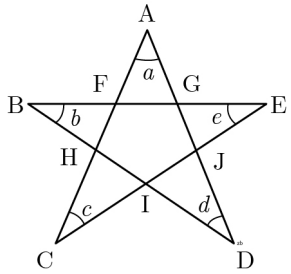


93.

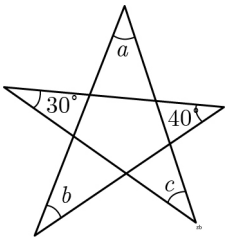


◪ 다음 그림에서 주어진 각의 크기를 구하여라.

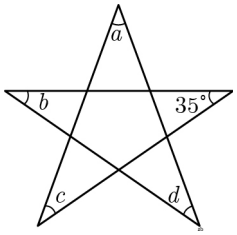
94. $\angle a+\angle b+\angle c+\angle d+\angle e$**의 크기**



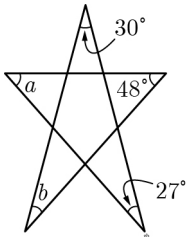
95. $\angle a+\angle b+\angle c$**의 크기**



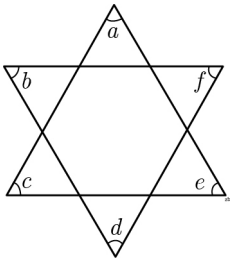
96. $\angle a+\angle b+\angle c+\angle d$**의 크기**



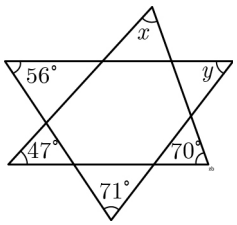
97. $\angle a+\angle b$**의 크기**



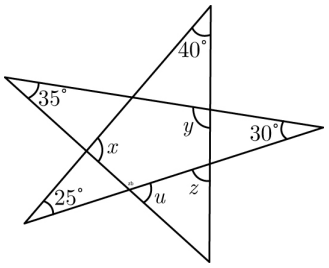
98. $\angle a+\angle b+\angle c+\angle d+\angle e+\angle f$**의 크기**



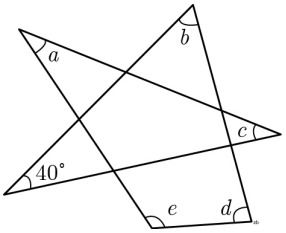
99. $\angle x+\angle y$**의 크기**



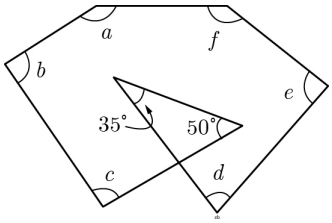
100 $\angle x+\angle y+\angle z+\angle u$의 크기



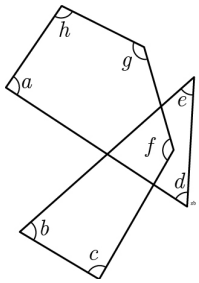
101 $\angle a+\angle b+\angle c+\angle d+\angle e$의 크기



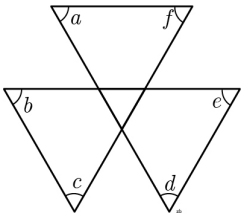
102 $\angle a+\angle b+\angle c+\angle d+\angle e+\angle f$의 크기



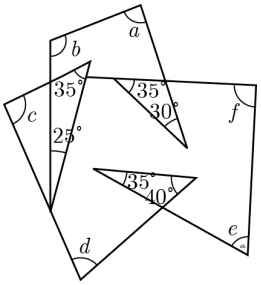
103 $\angle a+\angle b+\angle c+\angle d+\angle e+\angle f+\angle g+\angle h$의 크기



104 $\angle a+\angle b+\angle c+\angle d+\angle e+\angle f$의 크기

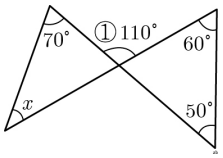


105 $\angle a+\angle b+\angle c+\angle d+\angle e+\angle f$의 크기



정답 및 해설

1) 40°



② $\angle x = 110^\circ - 70^\circ = 40^\circ$

2) 40°

3) 65°

⇨ $\angle x + 35^\circ = 44^\circ + 56^\circ \quad \therefore \angle x = 65^\circ$

4) 24°

⇨ $56^\circ + \angle x = 43^\circ + 37^\circ \quad \therefore \angle x = 24^\circ$

5) 29°

⇨ $\angle x + 51^\circ = 40^\circ + 40^\circ \quad \therefore \angle x = 29^\circ$

6) 58°

⇨ $39^\circ + \angle x = 47^\circ + 50^\circ \quad \therefore \angle x = 58^\circ$

7) 125°

8) 102°

⇨ $\angle ABC = 180^\circ - (54^\circ + 78^\circ) = 48^\circ$ 이므로

$\angle ABD = \angle DBC = \frac{1}{2}\angle ABC = 24^\circ$

$\angle x = 24^\circ + 78^\circ = 102^\circ$

9) 76°

⇨ $\triangle DBC$에서 $\angle DCB = 180^\circ - (94^\circ + 68^\circ) = 18^\circ$

$\angle ACD = \angle DCB = 18^\circ$ 이므로 $\triangle ADC$에서

$\angle x + 18^\circ = 94^\circ \quad \therefore \angle x = 76^\circ$

10) 109°

⇨ $\triangle ABC$에서 $41^\circ + \angle ABC = 101^\circ$ 이므로

$\angle ABC = 60^\circ \qquad \angle ABD = \angle DBC = \frac{1}{2}\angle ABC = 30^\circ$ 이

므로 $\triangle ABD$에서 $\angle x = 180^\circ - (41^\circ + 30^\circ) = 109^\circ$

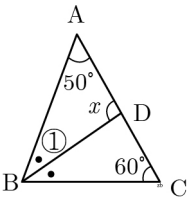
11) 71°

⇨ $\triangle ABD$에서 $\angle BAD + 97^\circ = 123^\circ$ 이므로

$\angle BAD = 26^\circ \qquad \angle BAC = 2\angle BAD = 52^\circ$ 이므로

$\triangle ABC$에서 $52^\circ + \angle x = 123^\circ \quad \therefore \angle x = 71^\circ$

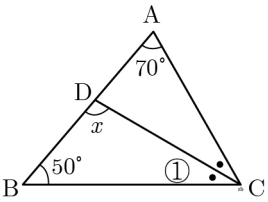
12) 95°



① $\triangle ABC$에서 $(180^\circ - 50^\circ - 60^\circ) \div 2 = 35^\circ$

② $\triangle ABD$에서 $\angle x = 180^\circ - (50^\circ + 35^\circ) = 95^\circ$

13) 100°



① $\triangle ABC$에서 $(180^\circ - 70^\circ - 50^\circ) \div 2 = 30^\circ$

② $\triangle DBC$에서 $\angle x = 180^\circ - (50^\circ + 30^\circ) = 100^\circ$

14) 140°

⇨ $\triangle ABD$에서

$60^\circ + \angle ABD = 100^\circ \qquad \therefore \angle ABD = 40^\circ$

$\therefore \angle DBC = \angle ABD = 40^\circ$

$\triangle ABC$에서 $60^\circ + \angle ABC = \angle x$

$\therefore \angle x = 60^\circ + 80^\circ = 140^\circ$

15) 85°

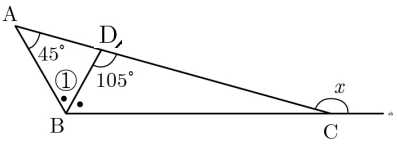
⇨ $\triangle ABC$에서 $\angle BAC = 180^\circ - (55^\circ + 45^\circ) = 80^\circ$

$\therefore \angle BAD = \frac{1}{2}\angle BAC = 40^\circ$

$\triangle ABD$에서 $40^\circ + 55^\circ + \angle x = 180^\circ$

$\therefore \angle x = 85^\circ$

16) 165°



① $\triangle ABD$에서 $105^\circ - 45^\circ = 60^\circ$

② $\triangle ABC$에서 $\angle x = 45^\circ + 60^\circ + 60^\circ = 165^\circ$

17) 29°

⇨ $180^\circ - (35^\circ + 43^\circ) = 102^\circ$ 이므로

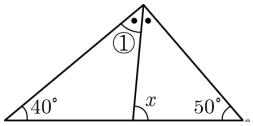
$\angle x + 73^\circ = 102^\circ \quad \therefore \angle x = 29^\circ$

18) 27°

⇨ $21^\circ + 90^\circ = 111^\circ$ 이므로

$\angle x = 180^\circ - (42^\circ + 111^\circ) = 27^\circ$

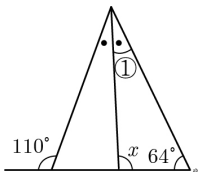
19) 85°

⇨ 

① $(180^\circ-40^\circ-50^\circ)\div 2=45^\circ$

② $\angle x=40^\circ+45^\circ=85^\circ$

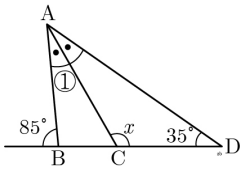
20) 93°

⇨ 

① $(110^\circ-64^\circ)\div 2=23^\circ$

② $\angle x=180^\circ-(23^\circ+64^\circ)=93^\circ$

21) 120°

⇨ 

① $\triangle ABD$에서 $85^\circ-35^\circ=50^\circ$

② $\angle CAD=50^\circ\div 2=25^\circ$

$\therefore\ \angle x=180^\circ-(25^\circ+35^\circ)=120^\circ$

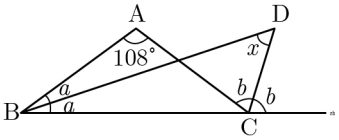
22) 120°

23) 54°

⇨ 다음 그림의 $\triangle ABC$에서 $2\angle b=108^\circ+2\angle a$

$\angle b-\angle a=54^\circ$ $\triangle DBC$에서 $\angle b=\angle x+\angle a$

$\therefore \angle x=\angle b-\angle a=54^\circ$



24) 25°

25) 35°

26) 35°

⇨ $\triangle ABC$에서 $\angle ACE-\angle ABC=70^\circ$

$\triangle DBC$에서

$$\angle x=\angle DCE-\angle DBC=\frac{1}{2}(\angle ACE-\angle ABC)$$

$$=\frac{1}{2}\times 70^\circ=35^\circ$$

27) 54°

28) 86°

29) 34°

⇨ $\angle x=\frac{1}{2}\times 68^\circ=34^\circ$

30) 60°

⇨ $30^\circ=\frac{1}{2}\times\angle x$ $\therefore\ \angle x=60^\circ$

31) $\angle x=40^\circ$, $\angle y=25^\circ$

⇨ $\triangle ABO$에서 $45^\circ+\angle x=85^\circ$ $\therefore\ \angle x=40^\circ$

$\triangle CDO$에서 $\angle y+60^\circ=85^\circ$ $\therefore\ \angle y=25^\circ$

32) $\angle x=75^\circ$, $\angle y=45^\circ$

⇨ $\triangle ABO$에서 $\angle x=110^\circ-35^\circ=75^\circ$

$\triangle CDO$에서 $\angle y=110^\circ-65^\circ=45^\circ$

33) $\angle x=70^\circ$, $\angle y=105^\circ$

34) $\angle x=85^\circ$, $\angle y=35^\circ$

⇨ $\triangle ADO$에서 $\angle x=30^\circ+55^\circ=85^\circ$

$\triangle BCO$에서 $\angle y=85^\circ-50^\circ=35^\circ$

35) $\angle x=100^\circ$, $\angle y=35^\circ$

36) 20°

⇨ $\overline{AB}=\overline{AC}$이므로 $\angle ACB=\angle ABC=\angle x$ $\triangle ABC$에서 $\angle DAC=\angle x+\angle x=2\angle x$ $\overline{AC}=\overline{CD}$이므로 $\angle ADC=\angle DAC=2\angle x$ $\triangle DBC$에서 $\angle x+2\angle x=60^\circ$

$3\angle x=60^\circ$ $\therefore \angle x=20^\circ$

37) 42°

⇨ $\angle CBA=x$, $\angle BCD=\angle BDC=2x$

$\angle CBD=180^\circ-4x$이므로

$\angle DBE=180^\circ-(x+180^\circ-4x)=3x=126^\circ$

$\therefore\ x=42^\circ$

38) 66°

39) 80°

40) 92°

41) 93°

42) 28°

43) 26°

44) 72°

45) 90°

46) 50°

47) 78°

⇨ △DBC는 이등변삼각형이므로
$\angle DCB = \angle DBC = 26^\circ$
△DBC에서 $\angle ADC = 26^\circ + 26^\circ = 52^\circ$
△ADC는 이등변삼각형이므로 $\angle CAD = \angle CDA = 52^\circ$
△ABC에서 $\angle x = 52^\circ + 26^\circ = 78^\circ$

48) 105°
⇨ △DBC에서 $\angle DCB = 35^\circ$
$\angle ADC = 35^\circ + 35^\circ = 70^\circ$
△ABC에서 $\angle x = 70^\circ + 35^\circ = 105^\circ$

49) 92°

50) 39°
⇨ △DBC에서
$\angle ADC = \angle x + \angle x = 2\angle x$, $\angle DAC = 2\angle x$
△ABC에서 $2\angle x + \angle x = 117^\circ$, $3\angle x = 117^\circ$
$\therefore \angle x = 39^\circ$

51) 125°

52) 120°
⇨ $\angle x = 65^\circ + 20^\circ + 35^\circ = 120^\circ$

53) 93°

54) 116°

55) 61°

56) 33°

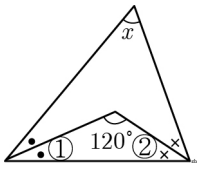
57) 123°
⇨ $\angle x = 28^\circ + 60^\circ + 35^\circ = 123^\circ$

58) 70°
⇨ $\angle x + 40^\circ + 50^\circ = 160^\circ$ 이므로 $\angle x = 70^\circ$

59) 23°
⇨ $80^\circ + \angle x + 15^\circ = 118^\circ$ $\therefore \angle x = 23^\circ$

60) 135°
⇨ $\angle x = 80^\circ + 25^\circ + 30^\circ = 135^\circ$

61) 130°
⇨ $\angle x = 30^\circ + 60^\circ + 40^\circ = 130^\circ$

62) 60°
⇨ 

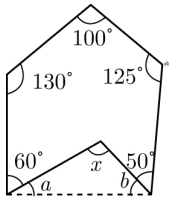
$(① + ②) = 180^\circ - 120^\circ = 60^\circ$
$\therefore \angle x = 180^\circ - 2 \times 60^\circ = 60^\circ$

63) 110°
⇨ △ABC에서 $\angle B + \angle C = 180^\circ - 40^\circ = 140^\circ$
$\therefore \frac{1}{2}(\angle B + \angle C) = 70^\circ$
△DBC에서 $\angle x + \frac{1}{2}(\angle B + \angle C) = 180^\circ$
$\angle x + 70^\circ = 180^\circ$ $\therefore \angle x = 110^\circ$

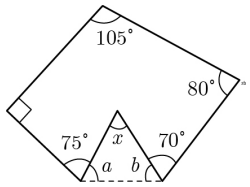
64) 125°
⇨ $\angle x = 25^\circ + 70^\circ + 30^\circ = 125^\circ$

65) 125°
⇨ △ABC에서 $\angle B + \angle C = 180^\circ - 70^\circ = 110^\circ$,
$\therefore \frac{1}{2}(\angle B + \angle C) = 55^\circ$
△DBC에서 $\angle x = 180^\circ - 55^\circ = 125^\circ$

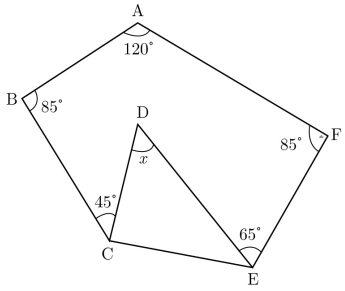
66) 80°
⇨ △DBC에서 $\frac{1}{2}(\angle B + \angle C) = 180^\circ - 130^\circ = 50^\circ$
△ABC에서 $\angle x = 180^\circ - 2 \times 50^\circ = 80^\circ$

67) 105°
⇨ 

$\angle a + \angle b = 540^\circ - (100^\circ + 130^\circ + 60^\circ + 50^\circ + 125^\circ)$
$= 75^\circ$
△ABC에서
$\angle x = 180^\circ - (\angle a + \angle b) = 180^\circ - 75^\circ = 105^\circ$

68) 60°
⇨ 

$105^\circ + 90^\circ + 75^\circ + 70^\circ + 80^\circ = 420^\circ$ 이므로
$\angle a + \angle b = 540^\circ - 420^\circ = 120^\circ$
$\therefore \angle x = 180^\circ - 120^\circ = 60^\circ$

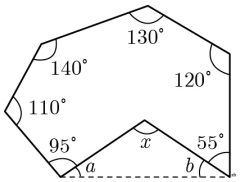
69) 40°
⇨ 

$\overline{CE}$를 그으면 $\angle DCE+\angle DEC=180^\circ-\angle x$
이제 오각형의 내각의 합이 540° 이므로
$120^\circ+85^\circ+(45^\circ+\angle DCE)+(65^\circ+\angle DEC)+85^\circ=540^\circ$
$\angle DCE+\angle DEC=140^\circ$
$180^\circ-\angle x=140^\circ$ $\therefore\ \angle x=40^\circ$

70) 123°

71) 122°

72) 110°



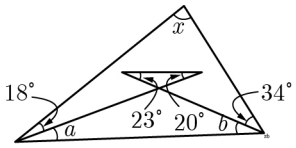
$130^\circ+140^\circ+110^\circ+95^\circ+55^\circ+120^\circ=650^\circ$ 이므로
$\angle a+\angle b=720^\circ-650^\circ=70^\circ$
$\therefore\ \angle x=180^\circ-70^\circ=110^\circ$

73) 21°

74) 44°

75) 80°

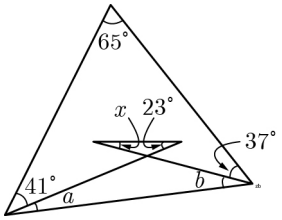
76) 85°
⇨ 다음 그림과 같이 보조선을 그으면



$\angle a+\angle b=23^\circ+20^\circ=43^\circ$ 이므로
$\angle x=180^\circ-(18^\circ+34^\circ+43^\circ)=85^\circ$

77) 125°

78) 14°
⇨ 다음 그림과 같이 보조선을 그으면



$\angle a+\angle b=180^\circ-(65^\circ+41^\circ+37^\circ)=37^\circ$ 이므로
$\angle x+23^\circ=37^\circ$ $\therefore\ \angle x=14^\circ$

79) 43°

80) 23°

81) 129°

82) $\angle x=110^\circ,\ \angle y=80^\circ$
⇨ $\angle y=20^\circ+60^\circ=80^\circ,\ \angle x=80^\circ+30^\circ=110^\circ$

83) $\angle x=130^\circ,\ \angle y=105^\circ$
⇨ $\angle y=35^\circ+70^\circ=105^\circ,\ \angle x=105^\circ+25^\circ=130^\circ$

84) $\angle x=30^\circ,\ \angle y=82^\circ$
⇨ $\angle y+42^\circ=124^\circ$ $\therefore\ \angle y=82^\circ$
$\angle x+52^\circ=82^\circ$ $\therefore\ \angle x=30^\circ$

85) $\angle x=98^\circ,\ \angle y=36^\circ$
⇨ $\angle x+47^\circ=145^\circ$ $\therefore\ \angle x=98^\circ$
$\angle y+62^\circ=98^\circ$ $\therefore\ \angle y=36^\circ$

86) $\angle x=46^\circ,\ \angle y=34^\circ$
⇨ $\angle y=180^\circ-(70^\circ+76^\circ)=34^\circ$
$70^\circ+\angle x+34^\circ=150^\circ$ $\therefore\ \angle x=46^\circ$

87) $\angle x=43^\circ,\ \angle y=43^\circ$
⇨ $\angle x=180^\circ-(61^\circ+76^\circ)=43^\circ$
$61^\circ+43^\circ+\angle y=147^\circ$ $\therefore\ \angle y=43^\circ$

88) 47°

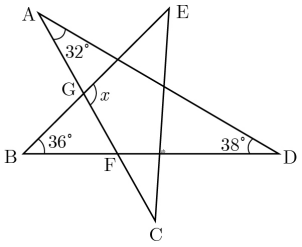
89) 50°

90) 41°

91) 90°
⇨ $\triangle ADH$에서 $\angle IHC=30^\circ+20^\circ=50^\circ$
$\triangle CIH$에서 $\angle x=50^\circ+40^\circ=90^\circ$

92) 61°
⇨ $\triangle CPQ$의 외각에서 $\angle DPA=30^\circ+65^\circ=95^\circ$
$\triangle ADP$에서 $\angle x+95^\circ+24^\circ=180^\circ$
$\therefore\ \angle x=180^\circ-119^\circ=61^\circ$

93) 106°



⇨
$\triangle ADF$ 의 두 내각의 크기의 합이 한 외각의 크기와 같으므로 $\angle GFB=32^\circ+38^\circ=70^\circ$
$\triangle GBF$ 의 두 내각의 크기의 합이 한 외각의 크기와 같으므로 $\angle x=36^\circ+70^\circ=106^\circ$

94) 180°
⇨ $\triangle BDG$에서 $\angle AGB=\angle b+\angle d$
$\triangle FCE$에서 $\angle AFE=\angle c+\angle e$
$\triangle AFG$에서

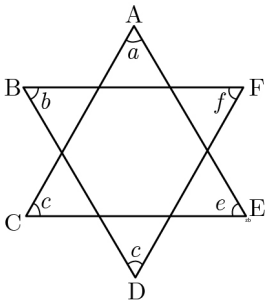
$\angle a+\angle \mathrm{AFG}+\angle \mathrm{AGF}$
$=\angle a+(\angle c+\angle e)+(\angle b+\angle d)=180^\circ$

95) 110°
⇨ $\angle a+30^\circ+\angle b+\angle c+40^\circ=180^\circ$
$\therefore\ \angle a+\angle b+\angle c=110^\circ$

96) 145°

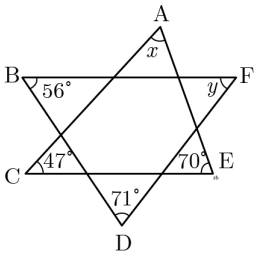
97) 75°

98) 360°



⇨
다음 그림의 $\triangle \mathrm{ACE}$에서 $\angle a+\angle c+\angle e=180^\circ$
$\triangle \mathrm{BDF}$에서 $\angle b+\angle d+\angle f=180^\circ$
$\therefore \angle a+\angle b+\angle c+\angle d+\angle e+\angle f=180^\circ+180^\circ=360^\circ$

99) 116°



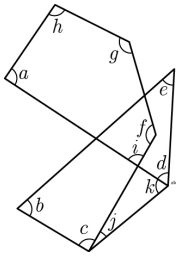
⇨
다음 그림의 $\triangle \mathrm{ACE}$에서
$\angle x=180^\circ-(47^\circ+70^\circ)=63^\circ$
$\triangle \mathrm{BDF}$에서 $\angle y=180^\circ-(56^\circ+71^\circ)=53^\circ$
$\therefore \angle x+\angle y=63^\circ+53^\circ=116^\circ$

100) 315°

101) 320°

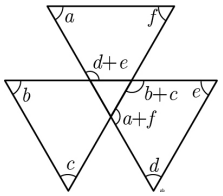
102) 635°

103) 720°



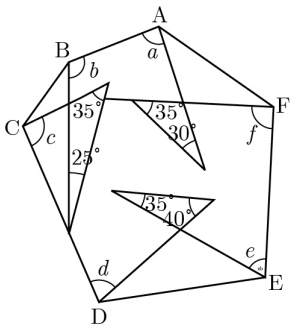
⇨
오각형의 내각의 합에서
$\angle a+\angle i+\angle f+\angle g+\angle h=540^\circ$ 이므로
$\angle i=540^\circ-(\angle a+\angle f+\angle g+\angle h)$
삼각형의 세 내각의 합에서 $\angle i+\angle j+\angle k=180^\circ$
$\angle j+\angle k=180^\circ-\angle i$
이제 사각형의 내각의 합에서
$\angle b+(\angle c+\angle j)+(\angle k+\angle d)+\angle e=360^\circ$
$(\angle b+\angle c+\angle d+\angle e)+(\angle j+\angle k)=360^\circ$
$(\angle b+\angle c+\angle d+\angle e)+(180^\circ-\angle i)=360^\circ$
$(\angle b+\angle c+\angle d+\angle e)+$
$180^\circ-\{540^\circ-(\angle a+\angle f+\angle g+\angle h\}=360^\circ$
$\therefore \angle a+\angle b+\angle c+\angle d+\angle e+\angle f+\angle g+\angle h$
$=360^\circ-180^\circ+540^\circ=720^\circ$

104) 360°



⇨
삼각형의 두 내각의 크기의 합은 한 외각의 크기와 같다.
이때 $\angle a+\angle f$, $\angle b+\angle c$, $\angle d+\angle e$ 는
각각 삼각형의 외각이므로 삼각형의 외각의 합에서
$\angle a+\angle b+\angle c+\angle d+\angle e+\angle f=360^\circ$

105) 520°



⇨
육각형의 내각의 합은 $180^\circ\times(6-2)=720^\circ$ 이므로
$\angle a+\angle b+(35^\circ+25^\circ)+\angle c+\angle d+(35^\circ+40^\circ)$
$+\angle e+\angle f+(35^\circ+30^\circ)=720^\circ$
$\therefore \angle a+\angle b+\angle c+\angle d+\angle e+\angle f=720^\circ-200^\circ=520^\circ$