



◇ 「콘텐츠산업 진흥법 시행령」 제33조에 의한 표시
 1) 제작연월일 : 2016-10-25
 2) 제작자 : 교육지대(주)
 3) 이 콘텐츠는 「콘텐츠산업 진흥법」에 따라 최초 제작일부터 5년간 보호됩니다.

◇ 「콘텐츠산업 진흥법」 외에도 「저작권법」에 의하여 보호되는 콘텐츠의 경우, 그 콘텐츠의 전부 또는 일부를 무단으로 복제하거나 전송하는 것은 콘텐츠산업 진흥법 외에도 저작권법에 의한 법적 책임을 질 수 있습니다.

계산시 참고사항

1. 삼각형의 내각과 외각

1) 삼각형의 내각의 크기의 합

: 삼각형 ABC의 세 내각의 크기의 합은 180° 이다. $\Rightarrow \angle A + \angle B + \angle C = 180^\circ$

2) 삼각형의 외각의 크기

: 삼각형 ABC에서 한 외각의 크기는 그와 이웃하지 않는 두 내각의 크기의 합과 같다.

2. 다각형의 내각과 외각

1) n 각형의 내각의 크기의 합 $\Rightarrow 180^\circ \times (n-2)$

2) n 각형의 외각의 크기의 합은 항상 360° 이다.

참고

● n 각형의 한 꼭짓점에서 대각선을 그려 만들어지는 삼각형의 개수 : $(n-2)$ 개



삼각형의 내각과 외각의 크기

■ 삼각형의 세 내각의 크기의 비가 다음과 같을 때, 가장 큰 각의 크기를 구하여라.

1. $1:2:3$

2. $1:1:4$

3. $1:3:5$

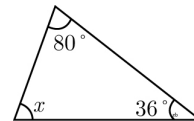
4. $2:3:4$

5. $2:3:5$

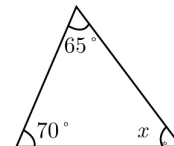
6. $3:4:5$

■ 다음 삼각형에서 $\angle x$ 의 크기를 구하여라.

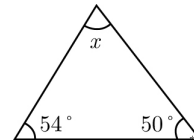
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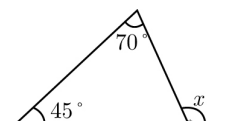
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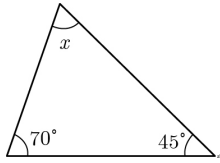
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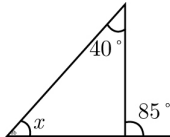
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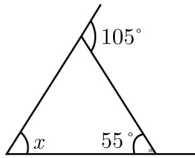
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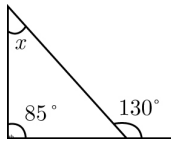
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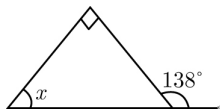
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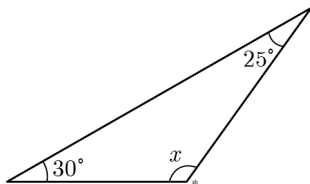
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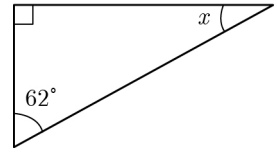
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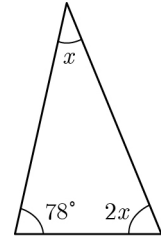
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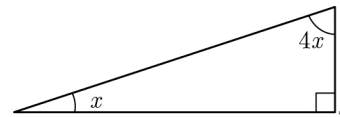
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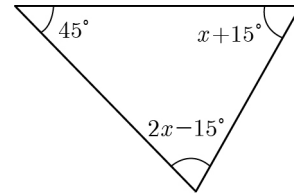
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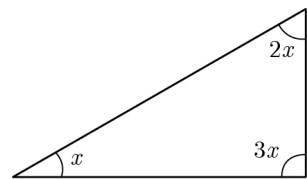
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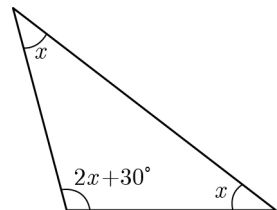
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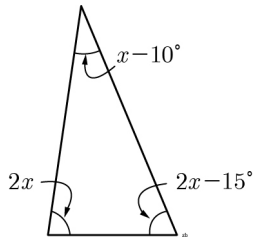
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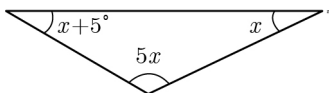
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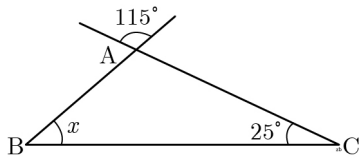
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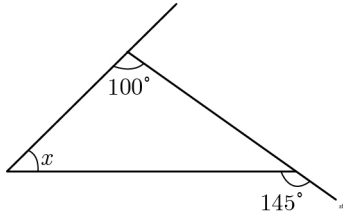
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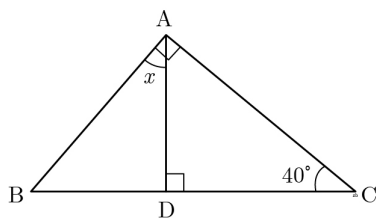
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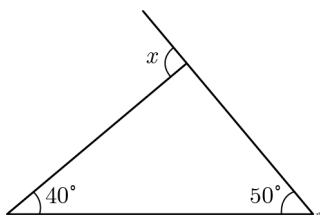
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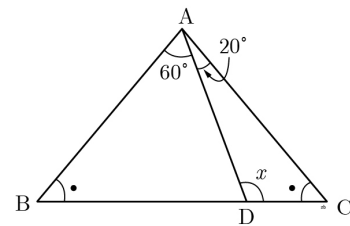
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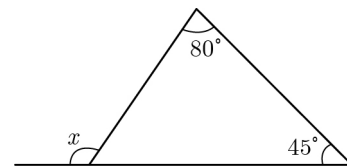
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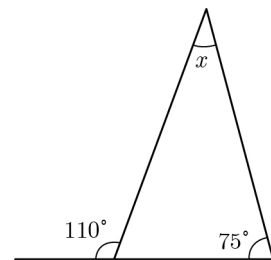
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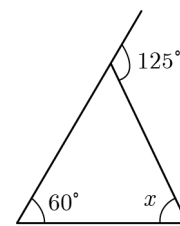
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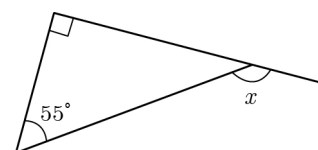
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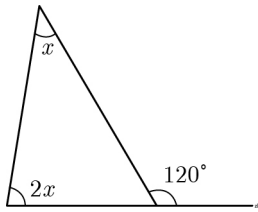
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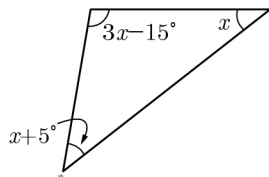
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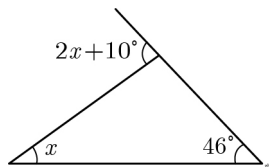
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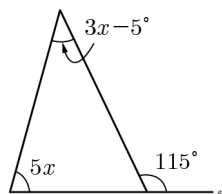
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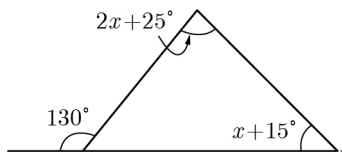
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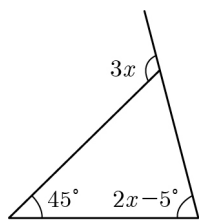
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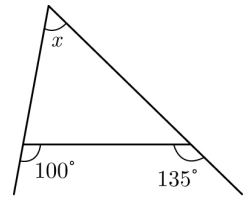
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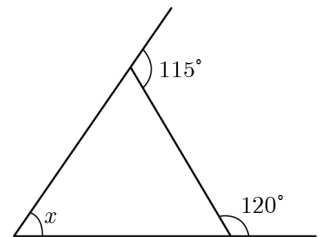
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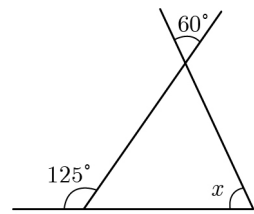
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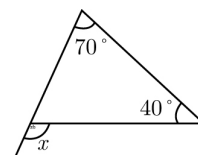
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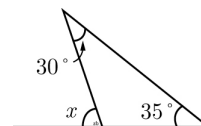
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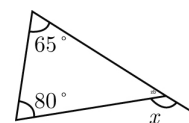
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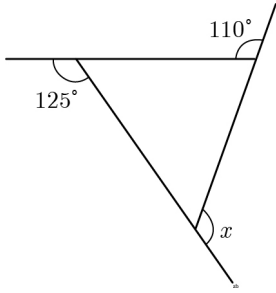
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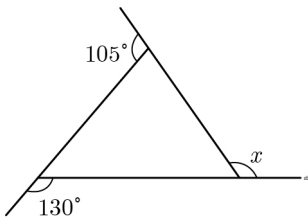
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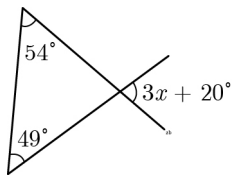
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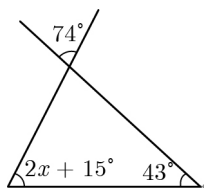
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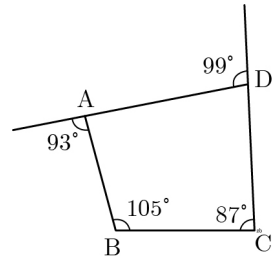


49.



다각형의 내각과 외각의 크기

■ 다음 그림을 보고, 다음을 구하여라.



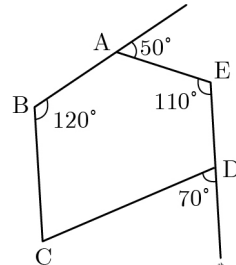
50. $\angle A$ 의 내각의 크기

51. $\angle B$ 의 외각의 크기

52. $\angle C$ 의 외각의 크기

53. $\angle D$ 의 내각의 크기

■ 다음 그림을 보고, 다음을 구하여라.



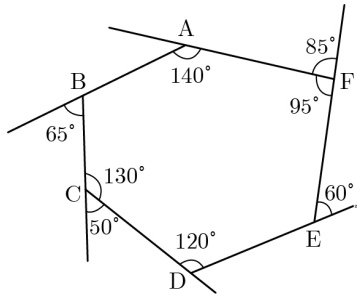
54. $\angle A$ 의 외각의 크기

55. $\angle B$ 의 내각의 크기

56. $\angle D$ 의 외각의 크기

57. $\angle E$ 의 내각의 크기

■ 육각형 ABCDEF에서 다음 각의 크기를 구하여라.



58. $\angle A$ 의 내각

59. $\angle B$ 의 외각

60. $\angle C$ 의 외각

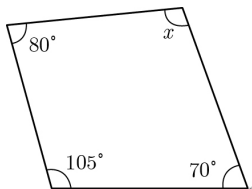
61. $\angle D$ 의 내각

62. $\angle E$ 의 외각

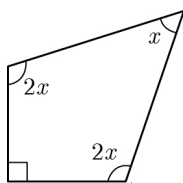
63. $\angle F$ 의 내각

■ 다음 다각형에서 $\angle x$ 의 크기를 구하여라.

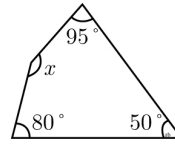
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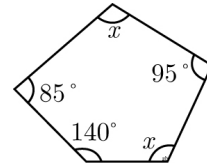
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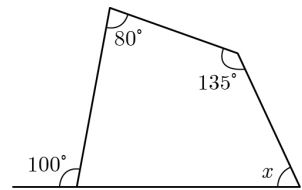
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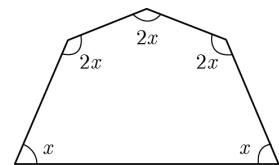
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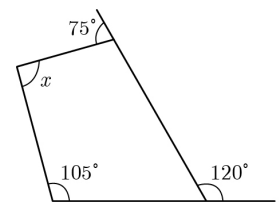
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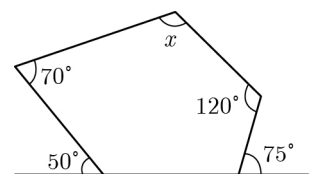
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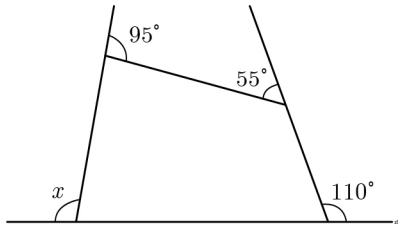
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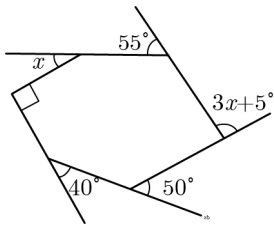
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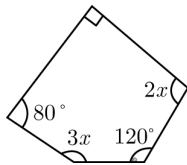
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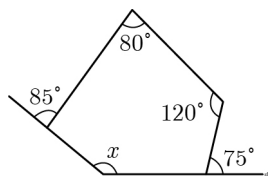
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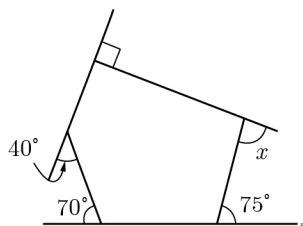
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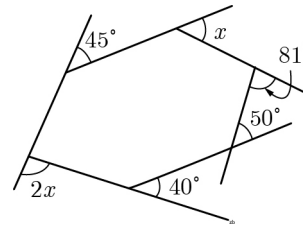
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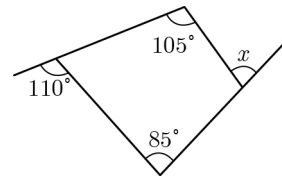
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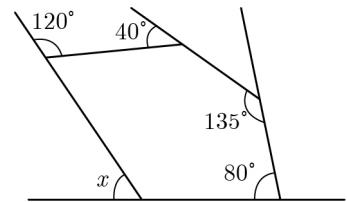
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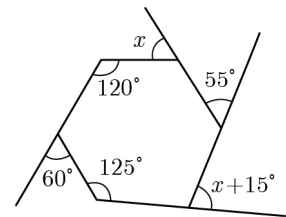
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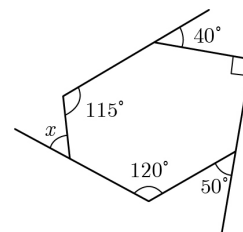
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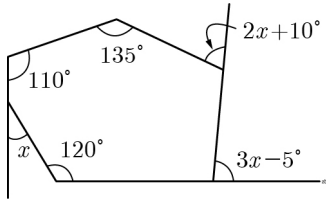
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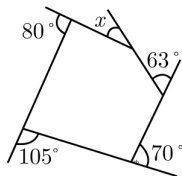
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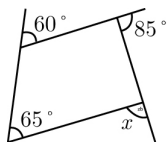
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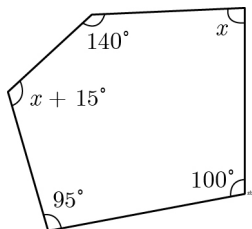
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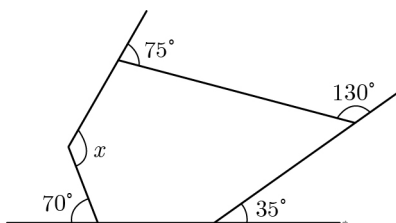
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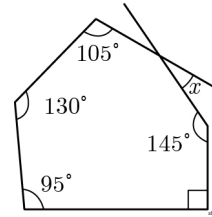
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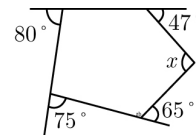
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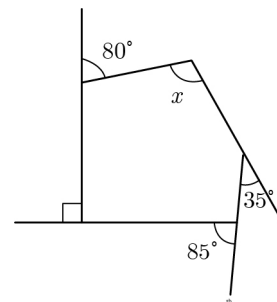
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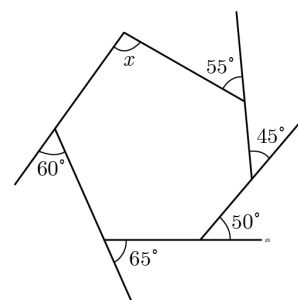
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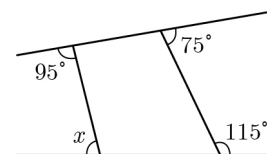
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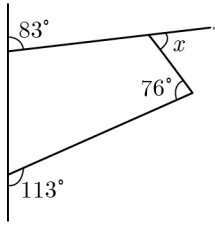
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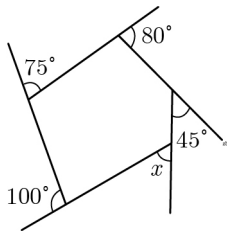
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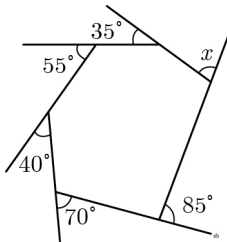
92.



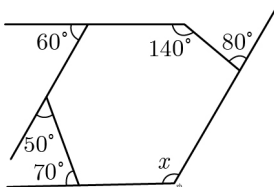
93.



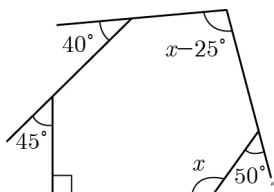
94.



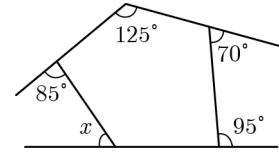
95.



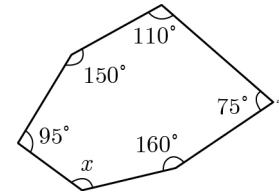
96.



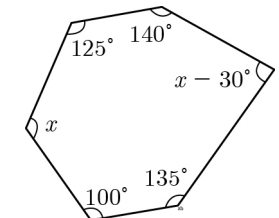
97.



98.



99.



■ 다음 다각형의 내각의 크기의 합을 구하여라.

100 육각형

101팔각형

102십일각형

103십삼각형

104십오각형

105이십각형

▣ 내각의 크기의 합이 다음과 같은 다각형의 이름을 말하여라.

106. 540°

107. 720°

108. 900°

109. 1260°

110. 1800°

111. 2340°

112. 3240°

정답 및 해설

1) 90°

$$\Rightarrow 180^\circ \times \frac{3}{1+2+3} = 90^\circ$$

2) 120°

$$\Rightarrow 180^\circ \times \frac{4}{1+1+4} = 120^\circ$$

3) 100°

$$\Rightarrow 180^\circ \times \frac{5}{1+3+5} = 100^\circ$$

4) 80°

$$\Rightarrow 180^\circ \times \frac{4}{2+3+4} = 80^\circ$$

5) 90°

$$\Rightarrow 180^\circ \times \frac{5}{2+3+5} = 90^\circ$$

6) 75°

$$\Rightarrow 180^\circ \times \frac{5}{3+4+5} = 75^\circ$$

7) 64°

$$\Rightarrow \angle x = 180^\circ - (80^\circ + 36^\circ) = 64^\circ$$

8) 45°

$$\Rightarrow \angle x = 180^\circ - (65^\circ + 70^\circ) = 45^\circ$$

9) 76°

$$\Rightarrow \angle x = 180^\circ - (54^\circ + 50^\circ) = 76^\circ$$

10) 115°

$$\Rightarrow \angle x = 70^\circ + 45^\circ = 115^\circ$$

11) 65° 12) 45°

$$\Rightarrow \angle x = 85^\circ - 40^\circ = 45^\circ$$

13) 50°

$$\Rightarrow \angle x = 105^\circ - 55^\circ = 50^\circ$$

14) 45°

$$\Rightarrow \angle x = 130^\circ - 85^\circ = 45^\circ$$

15) 48°

$$\Rightarrow \angle x = 138^\circ - 90^\circ = 48^\circ$$

16) 125° 17) 28° 18) 34°

$$\Rightarrow \angle x + 78^\circ + 2\angle x = 180^\circ, 3\angle x = 102^\circ \\ \therefore \angle x = 34^\circ$$

19) 18°

$$\Rightarrow 4\angle x + \angle x + 90^\circ = 180^\circ, 5\angle x = 90^\circ \\ \therefore \angle x = 18^\circ$$

20) 45°

$$\Rightarrow 45^\circ + 2\angle x - 15^\circ + \angle x + 15^\circ = 180^\circ, 3\angle x = 135^\circ \\ \therefore \angle x = 45^\circ$$

21) 30°

$$\Rightarrow 2\angle x + \angle x + 3\angle x = 180^\circ, 6\angle x = 180^\circ \\ \therefore \angle x = 30^\circ$$

22) 37.5°

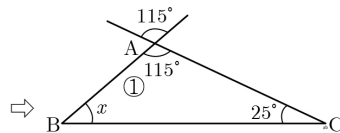
$$\Rightarrow \angle x + 2\angle x + 30^\circ + \angle x = 180^\circ, 4\angle x = 150^\circ \\ \therefore \angle x = 37.5^\circ$$

23) 41°

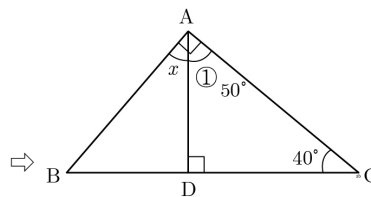
$$\Rightarrow \angle x - 10^\circ + 2\angle x + 2\angle x - 15^\circ = 180^\circ, 5\angle x = 205^\circ \\ \therefore \angle x = 41^\circ$$

24) 25°

$$\Rightarrow \angle x + 5^\circ + 5\angle x + \angle x = 180^\circ, 7\angle x = 175^\circ \\ \therefore \angle x = 25^\circ$$

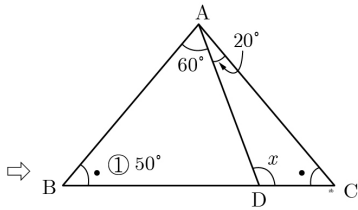
25) 40° 

$$\textcircled{2} \triangle ABC \text{에서 } 115^\circ + \angle x + 25^\circ = 180^\circ \therefore \angle x = 40^\circ$$

26) 45° 27) 40° 

$$\textcircled{2} \angle A = 90^\circ \text{ 이므로 } \angle x + 50^\circ = 90^\circ \therefore \angle x = 40^\circ$$

28) 90° 29) 110°



- ① $\triangle ABC$ 에서 $80^\circ + 2\angle \bullet = 180^\circ$, $\angle \bullet = 50^\circ$
 ② $\triangle ADC$ 에서 $20^\circ + \angle x + 50^\circ = 180^\circ \therefore \angle x = 110^\circ$

30) 125°

31) 35°

$\Rightarrow \angle x + 75^\circ = 110^\circ \therefore \angle x = 35^\circ$

32) 65°

33) 145°

34) 40°

$\Rightarrow \angle x + \angle 2x = 120^\circ$, $3\angle x = 120^\circ \therefore \angle x = 40^\circ$

35) 38°

$\Rightarrow 3\angle x - 15^\circ + \angle x + 5^\circ + \angle x = 180^\circ$
 $5\angle x = 190^\circ \therefore \angle x = 38^\circ$

36) 36°

$\Rightarrow 2\angle x + 10^\circ = \angle x + 46^\circ \therefore \angle x = 36^\circ$

37) 15°

$\Rightarrow 3\angle x - 5^\circ + 5\angle x = 115^\circ$, $8\angle x = 120^\circ$
 $\therefore \angle x = 15^\circ$

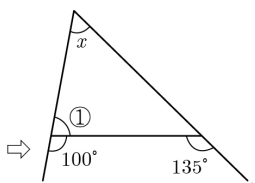
38) 30°

$\Rightarrow 2\angle x + 25^\circ + \angle x + 15^\circ = 130^\circ$, $3\angle x = 90^\circ$
 $\therefore \angle x = 30^\circ$

39) 40°

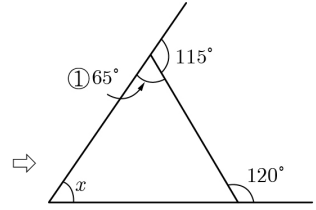
$\Rightarrow 45^\circ + 2\angle x - 5^\circ = 3\angle x \therefore \angle x = 40^\circ$

40) 55°



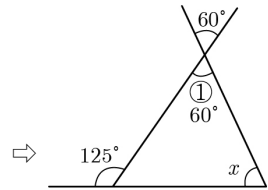
① $= 180^\circ - 100^\circ = 80^\circ$, $\angle x + ① = 135^\circ$
 $\therefore \angle x = 55^\circ$

41) 55°



② $65^\circ + \angle x = 120^\circ \therefore \angle x = 55^\circ$

42) 65°



② $60^\circ + \angle x = 125^\circ \therefore \angle x = 65^\circ$

43) 110°

$\Rightarrow \angle x = 70^\circ + 40^\circ = 110^\circ$

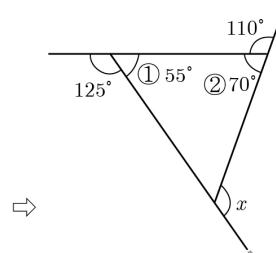
44) 65°

$\Rightarrow \angle x = 30^\circ + 35^\circ = 65^\circ$

45) 145°

$\Rightarrow \angle x = 65^\circ + 80^\circ = 145^\circ$

46) 125°



③ $55^\circ + 70^\circ = \angle x \therefore \angle x = 125^\circ$

47) 125°

$\Rightarrow \angle x = 360^\circ - (105^\circ + 130^\circ) = 125^\circ$

48) 19°

$\Rightarrow 3\angle x + 20^\circ = 180^\circ - (54^\circ + 49^\circ)$ 에서
 $3\angle x = 57^\circ \therefore \angle x = 19^\circ$

49) 24°

$\Rightarrow (2\angle x + 15^\circ) + 43^\circ + 74^\circ = 180^\circ$ 에서
 $2\angle x = 48^\circ \therefore \angle x = 24^\circ$

50) 87°

$\Rightarrow \angle A$ 의 외각의 크기가 93° 이므로
 $(\angle A$ 의 내각의 크기) $= 180^\circ - 93^\circ = 87^\circ$

51) 75°

$\Rightarrow \angle B$ 의 내각의 크기가 105° 이므로
 $(\angle B$ 의 외각의 크기) $= 180^\circ - 105^\circ = 75^\circ$

52) 93°

⇒ $\angle C$ 의 내각의 크기가 87° 이므로
 $(\angle C \text{의 외각의 크기}) = 180^\circ - 87^\circ = 93^\circ$

53) 81°

⇒ $\angle D$ 의 외각의 크기가 99° 이므로
 $(\angle D \text{의 내각의 크기}) = 180^\circ - 99^\circ = 81^\circ$

54) 50°

55) 120°

56) 70°

57) 110°

58) 140°

59) 65°

60) 50°

61) 120°

62) 60°

63) 95°

64) 105°

65) 54°

⇒ $2\angle x + \angle x + 2\angle x + 90^\circ = 360^\circ$
 $5\angle x = 270^\circ \quad \therefore \angle x = 54^\circ$

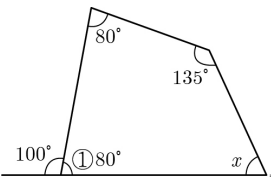
66) 135°

⇒ $\angle x = 360^\circ - (95^\circ + 50^\circ + 80^\circ) = 135^\circ$

67) 110°

⇒ $\angle x + 85^\circ + 140^\circ + \angle x + 95^\circ = 540^\circ$
 $\therefore \angle x = 110^\circ$

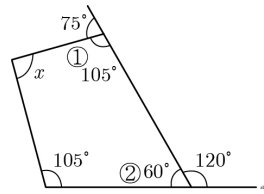
68) 65°

⇒ 
 ② $80^\circ + 80^\circ + \angle x + 135^\circ = 360^\circ \quad \therefore \angle x = 65^\circ$

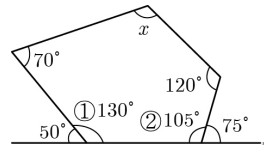
69) 67.5°

⇒ $2\angle x + 2\angle x + \angle x + \angle x + 2\angle x = 540^\circ$
 $8\angle x = 540^\circ \quad \therefore \angle x = 67.5^\circ$

70) 90°

⇒ 
 ③ $\angle x + 105^\circ + 60^\circ + 105^\circ = 360^\circ \quad \therefore \angle x = 90^\circ$

71) 115°

⇒ 
 ③ $\angle x + 70^\circ + 130^\circ + 105^\circ + 120^\circ = 540^\circ$
 $\therefore \angle x = 115^\circ$

72) 100°

⇒ $\angle x = 360^\circ - (95^\circ + 55^\circ + 110^\circ) = 100^\circ$

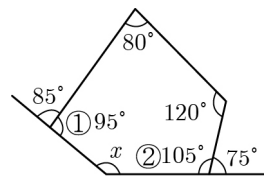
73) 30°

⇒ $\angle x + 3\angle x + 5^\circ = 360^\circ - (90^\circ + 40^\circ + 50^\circ + 55^\circ) = 125^\circ$
 $4\angle x = 120^\circ \quad \therefore \angle x = 30^\circ$

74) 50°

⇒ $90^\circ + 80^\circ + 3\angle x + 120^\circ + 2\angle x = 540^\circ$
 $\therefore \angle x = 50^\circ$

75) 140°

⇒ 
 ③ $\angle x = 540^\circ - (80^\circ + 95^\circ + 105^\circ + 120^\circ) = 140^\circ$

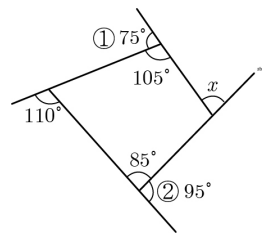
76) 85°

⇒ $\angle x = 360^\circ - (90^\circ + 40^\circ + 70^\circ + 75^\circ) = 85^\circ$

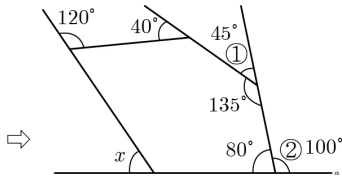
77) 48°

⇒ $45^\circ + 2\angle x + 40^\circ + 50^\circ + 81^\circ + \angle x = 360^\circ$
 $3\angle x = 144^\circ \quad \therefore \angle x = 48^\circ$

78) 80°

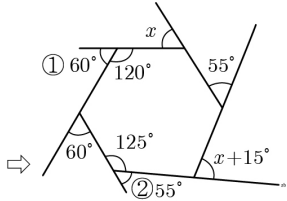
⇒ 
 ③ $\angle x = 360^\circ - (75^\circ + 110^\circ + 95^\circ) = 80^\circ$

79) 55°



$$\Rightarrow \textcircled{3} \angle x = 360^\circ - (100^\circ + 45^\circ + 40^\circ + 120^\circ) = 55^\circ$$

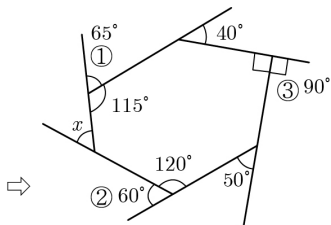
80) 57.5°



$$\textcircled{3} \angle x + 60^\circ + 60^\circ + 55^\circ + \angle x + 15^\circ + 55^\circ = 360^\circ$$

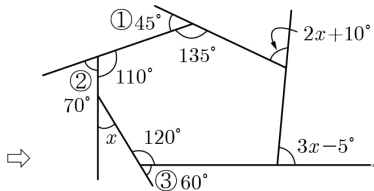
$$2\angle x = 115^\circ \quad \therefore \angle x = 57.5^\circ$$

81) 55°



$$\textcircled{4} \angle x = 360^\circ - (40^\circ + 65^\circ + 60^\circ + 50^\circ + 90^\circ) = 55^\circ$$

82) 30°



$$\textcircled{4} 45^\circ + 70^\circ + \angle x + 60^\circ + 3\angle x - 5^\circ + 2\angle x + 10^\circ = 360^\circ$$

$$6\angle x = 180^\circ \quad \therefore \angle x = 30^\circ$$

83) 42°

$$\Rightarrow \angle x = 360^\circ - (63^\circ + 70^\circ + 105^\circ + 80^\circ) = 42^\circ$$

84) 100°

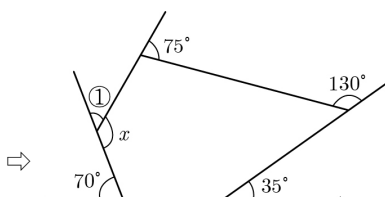
$$\Rightarrow \angle x = 360^\circ - (60^\circ + 85^\circ + 115^\circ) = 100^\circ$$

85) 95°

$$\Rightarrow \angle x + 15^\circ + 140^\circ + \angle x + 100^\circ + 95^\circ = 540^\circ \quad \text{이므로}$$

$$2\angle x = 190^\circ \quad \therefore \angle x = 95^\circ$$

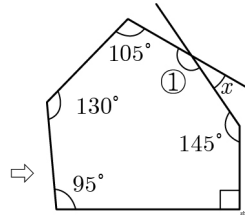
86) 130°



$$\textcircled{1} 360^\circ - (75^\circ + 70^\circ + 35^\circ + 130^\circ) = 50^\circ$$

$$\textcircled{2} \angle x = 180^\circ - 50^\circ = 130^\circ$$

87) 25°



$$\textcircled{1} 105^\circ + 130^\circ + 95^\circ + 90^\circ + 145^\circ = 565^\circ \quad \text{이므로}$$

$$720^\circ - 565^\circ = 155^\circ$$

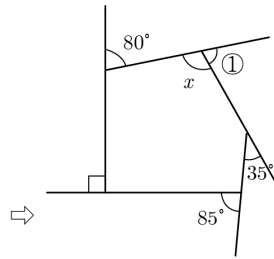
$$\textcircled{2} \angle x = 180^\circ - 155^\circ = 25^\circ$$

88) 87°

$$\Rightarrow 180^\circ - \angle x = 360^\circ - (80^\circ + 47^\circ + 65^\circ + 75^\circ)$$

$$\therefore \angle x = 87^\circ$$

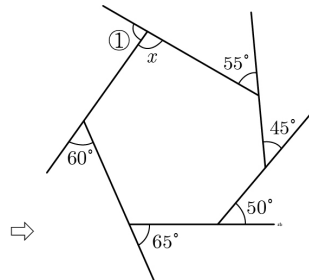
89) 110°



$$\textcircled{1} 360^\circ - (80^\circ + 90^\circ + 85^\circ + 35^\circ) = 70^\circ$$

$$\textcircled{2} \angle x = 180^\circ - 70^\circ = 110^\circ$$

90) 95°



$$\textcircled{1} 360^\circ - (60^\circ + 65^\circ + 50^\circ + 45^\circ + 55^\circ) = 85^\circ$$

$$\textcircled{2} \angle x = 180^\circ - 85^\circ = 95^\circ$$

91) 75°

$$\Rightarrow \angle x + 95^\circ + 75^\circ + 115^\circ = 360^\circ \quad \therefore \angle x = 75^\circ$$

92) 60°

$$\Rightarrow 180^\circ - 76^\circ = 104^\circ \quad \text{이므로}$$

$$\angle x + 104^\circ + 113^\circ + 83^\circ = 360^\circ \quad \therefore \angle x = 60^\circ$$

93) 60°

$$\Rightarrow \angle x + 100^\circ + 75^\circ + 80^\circ + 45^\circ = 360^\circ \quad \therefore \angle x = 60^\circ$$

94) 75°

$$\Rightarrow \angle x + 85^\circ + 70^\circ + 40^\circ + 55^\circ + 35^\circ = 360^\circ$$

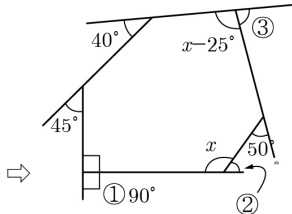
$$\therefore \angle x = 75^\circ$$

95) 120°

$$\Rightarrow 180^\circ - 140^\circ = 40^\circ \text{ 이므로}$$

$$(180^\circ - \angle x) + 70^\circ + 50^\circ + 60^\circ + 40^\circ + 80^\circ = 360^\circ$$

$$\therefore \angle x = 120^\circ$$

96) 125° 

$$(\textcircled{2} + \textcircled{3}) = 360^\circ - (40^\circ + 45^\circ + 90^\circ + 50^\circ) = 135^\circ$$

$$\textcircled{4} \quad \angle x - 25^\circ + \angle x = (180^\circ - \textcircled{2}) + (180^\circ - \textcircled{3})$$

$$= 360^\circ - (\textcircled{2} + \textcircled{3}) = 360^\circ - 135^\circ = 225^\circ$$

$$2\angle x = 250^\circ \quad \therefore \angle x = 125^\circ$$

97) 55°

$$\Rightarrow 180^\circ - 125^\circ = 55^\circ \text{ 이므로}$$

$$\angle x + 85^\circ + 55^\circ + 70^\circ + 95^\circ = 360^\circ \quad \therefore \angle x = 55^\circ$$

98) 130°

$$\Rightarrow \text{육각형의 내각의 크기의 합은 } 180^\circ \times (6-2) = 720^\circ \text{ 이므로}$$

$$\angle x + 95^\circ + 150^\circ + 110^\circ + 75^\circ + 160^\circ = 720^\circ$$

$$\therefore \angle x = 130^\circ$$

99) 125°

$$\Rightarrow$$

$$\angle x + 125^\circ + 140^\circ + (\angle x - 30^\circ) + 135^\circ + 100^\circ = 720^\circ$$

$$2\angle x = 250^\circ \quad \therefore \angle x = 125^\circ$$

100) 720°

$$\Rightarrow 180^\circ \times (6-2) = 720^\circ$$

101) 1080°

$$\Rightarrow 180^\circ \times (8-2) = 1080^\circ$$

102) 1620°

$$\Rightarrow 180^\circ \times (11-2) = 1620^\circ$$

103) 1980°

$$\Rightarrow 180^\circ \times (13-2) = 1980^\circ$$

104) 2340°

$$\Rightarrow 180^\circ \times (15-2) = 2340^\circ$$

105) 3240°

$$\Rightarrow 180^\circ \times (20-2) = 3240^\circ$$

106) 오각형

$$\Rightarrow \text{내각의 크기의 합이 } 540^\circ \text{ 인 다각형을 } n\text{각형이라고 하면}$$

$$180^\circ \times (n-2) = 540^\circ, \quad n-2=3 \quad \therefore n=5$$

107) 육각형

108) 칠각형

$$\Rightarrow \text{구하는 다각형을 } n\text{각형이라 하면}$$

$$180^\circ \times (n-2) = 900^\circ \quad \therefore n=7$$

따라서 구하는 다각형은 칠각형이다.

109) 구각형

$$\Rightarrow \text{구하는 다각형을 } n\text{각형이라 하면}$$

$$180^\circ \times (n-2) = 1260^\circ \quad \therefore n=9$$

따라서 구하는 다각형은 구각형이다.

110) 십이각형

$$\Rightarrow \text{구하는 다각형을 } n\text{각형이라 하면}$$

$$180^\circ \times (n-2) = 1800^\circ \quad \therefore n=12$$

따라서 구하는 다각형은 십이각형이다.

111) 십오각형

$$\Rightarrow \text{구하는 다각형을 } n\text{각형이라 하면}$$

$$180^\circ \times (n-2) = 2340^\circ \quad \therefore n=15$$

따라서 구하는 다각형은 십오각형이다.

112) 이십각형