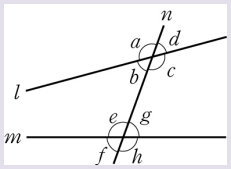
◇「콘텐츠산업 진흥법 시행령」제33조에 의한 표시
1) 제작연월일 : 2016-10-25
2) 제작자 : 교육지대㈜
3) 이 콘텐츠는 「콘텐츠산업 진흥법」에 따라 최초 제작일부터 5년간 보호됩니다.

◇「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. 동위각과 엇각

한 평면 위에서 서로 다른 두 직선 l, m이 한 직선 n과 만나서 생기는 8개의 각 중에서



1) 동위각: 같은 위치에 있는 각
⇨ $\angle a$와 $\angle e$, $\angle b$와 $\angle f$, $\angle c$와 $\angle g$, $\angle d$와 $\angle h$
2) 엇각: 엇갈린 위치에 있는각
⇨ $\angle b$와 $\angle h$, $\angle c$와 $\angle e$

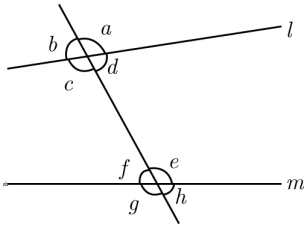
2. 평행선의 성질

1) 평행선의 성질: 평행한 두 직선이 다른 한 직선과 만날 때
(1) 동위각의 크기는 서로 같다.
(2) 엇각의 크기는 서로 같다.
2) 평행선이 되기 위한 조건: 서로 다른 두 직선 l, m이 다른 한 직선 n과 만날 때
(1) 동위각의 크기가 같으면 $l//m$이다.
(2) 엇각의 크기가 같으면 $l//m$이다.

참고
◉ 맞꼭지각의 크기는 언제나 같지만 동위각, 엇각의 크기는 두 직선이 평행할 때만 그 크기가 같다.

동위각과 엇각

◪ 다음 그림에서 다음 각의 동위각을 구하여라.



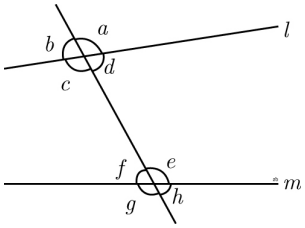
1. $\angle a$

2. $\angle b$

3. $\angle c$

4. $\angle d$

◪ 다음 그림에서 다음 각의 엇각을 구하여라.



5. $\angle a$

6. $\angle b$

7. $\angle c$

8. $\angle d$

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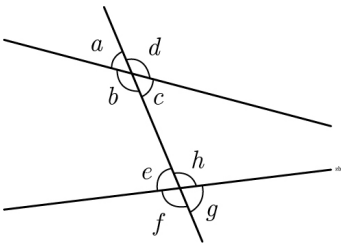
◪ 다음 그림과 같이 세 직선이 만날 때, 주어진 각을 찾아 써라.



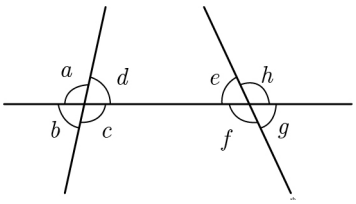
9. $\angle d$의 동위각

10. $\angle g$의 동위각

11. $\angle c$의 엇각

12. $\angle h$의 엇각

◪ 다음 그림과 같이 세 직선이 만날 때, 주어진 각을 찾아 써라.



13. $\angle a$의 동위각

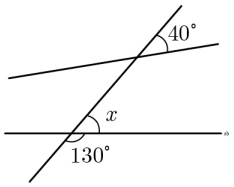
14. $\angle h$의 동위각

15. $\angle d$의 엇각

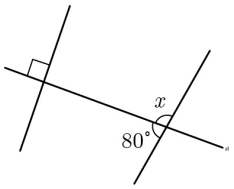
16. $\angle c$의 엇각

◪ 다음 그림에서 $\angle x$의 동위각의 크기를 구하여라.

17.



18.



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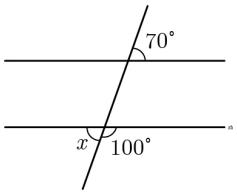

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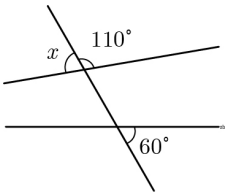

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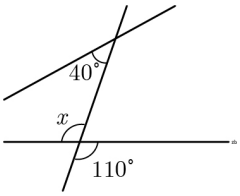

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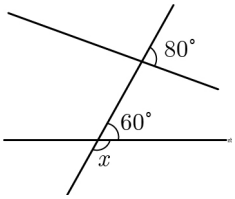

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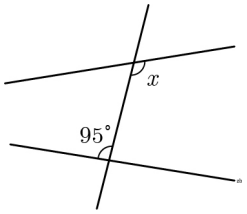
◪ 다음 그림에서 $\angle x$의 엇각의 크기를 구하여라.

23.



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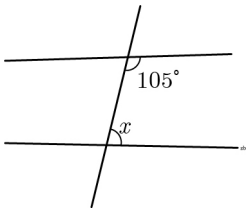

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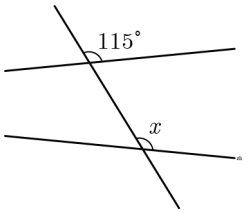

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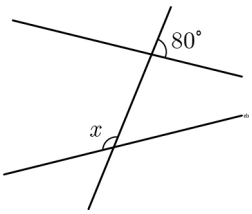
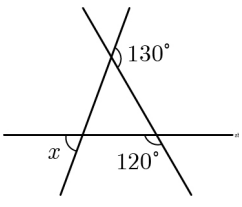


◪ 다음 그림에서 $\angle x$의 동위각의 크기의 합을 구하여라.

27.



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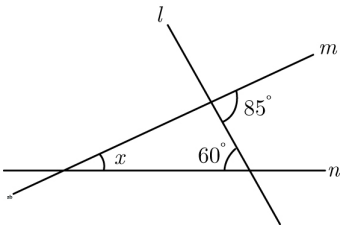

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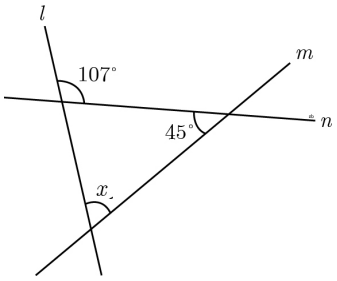

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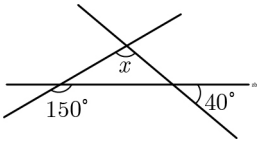

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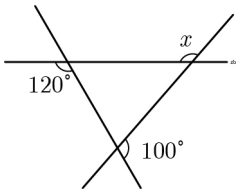

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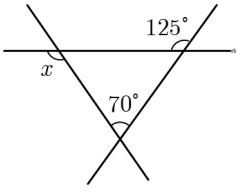

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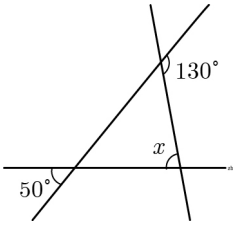
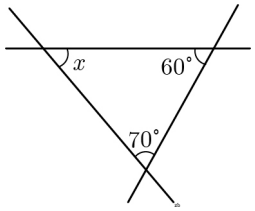
◪ 다음 그림에서 $\angle x$의 엇각의 크기의 합을 구하여라.

33.

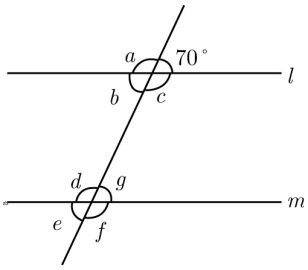


34.



평행선의 성질

◪ 다음 그림에서 $l//m$일 때, 다음 각의 크기를 구하여라.



35. $\angle a$

36. $\angle b$

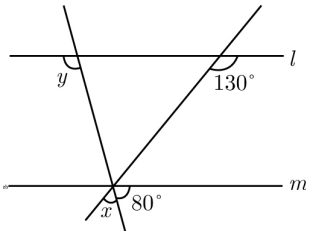
37. $\angle c$

38. $\angle d$

39. $\angle e$

40. $\angle f$

◪ 다음 그림에서 두 직선 l, m이 서로 평행할 때, 다음을 구하여라.

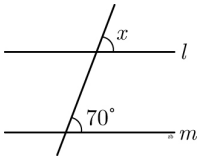


41. $\angle x$의 크기

42. $\angle y$의 크기

◪ 다음 그림에서 $l//m$일 때, $\angle x$의 크기를 구하여라.

43.



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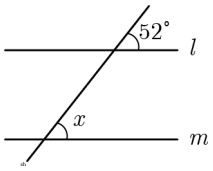

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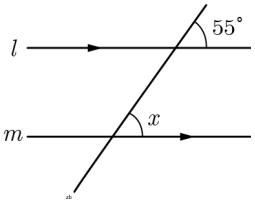
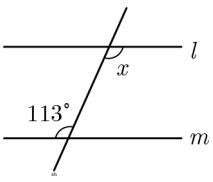


46.



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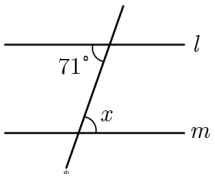
47.



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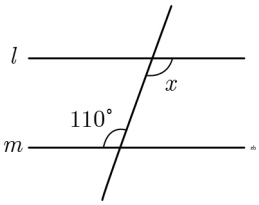

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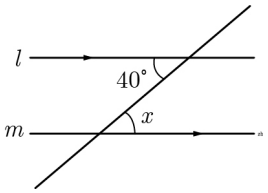

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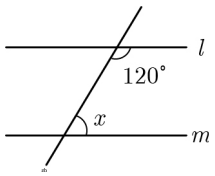

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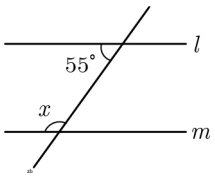

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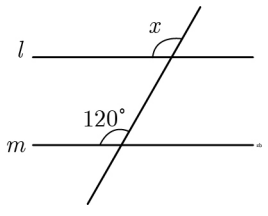

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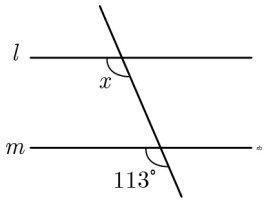
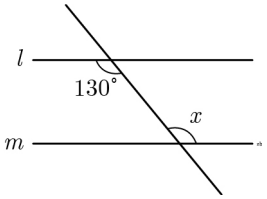
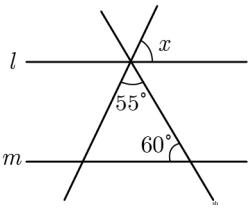


54.

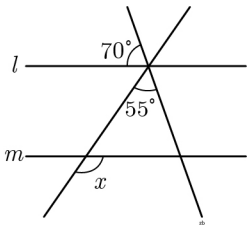


◪ 다음 그림에서 $l//m$일 때, $\angle x$의 크기를 구하여라.

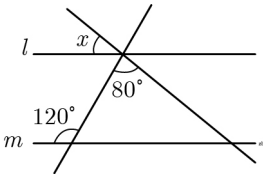
55.



56.



57.



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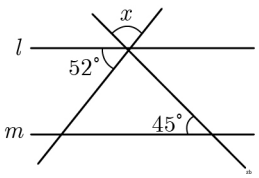
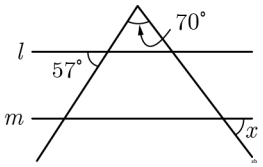
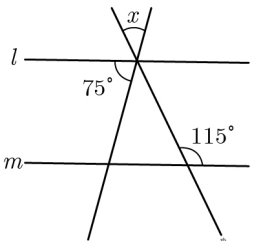
58.



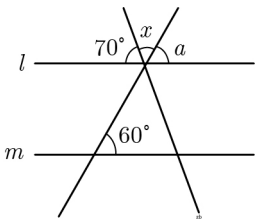
59.



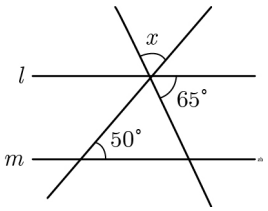
60.



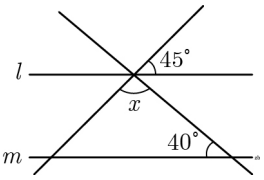
61.



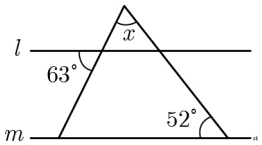
62.



63.

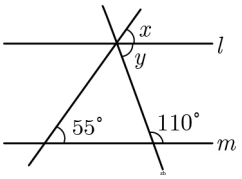


64.

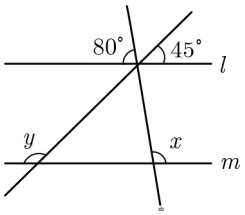


◪ **다음 그림에서 $l//m$일 때, $\angle x$, $\angle y$의 크기를 각각 구하여라.**

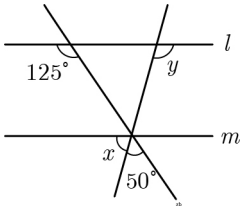
65.



66.



67.



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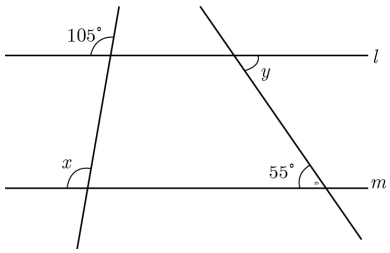
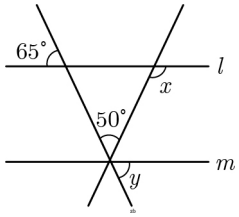
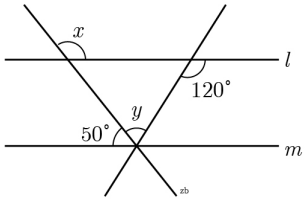
68.



69.



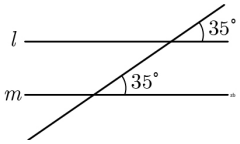
70.



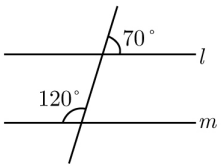
평행선이 되는 조건

◪ 다음 그림을 보고 두 직선 l, m이 서로 평행하면 ○표, 평행하지 않으면 ×표 하여라.

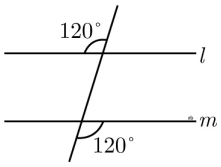
71. ( )



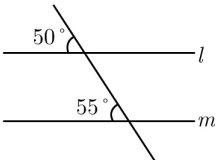
72. ( )



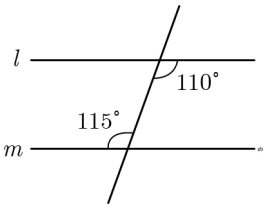
73. ( )



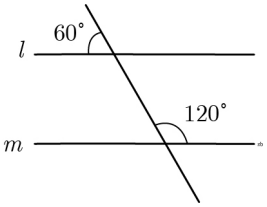
74. ( )



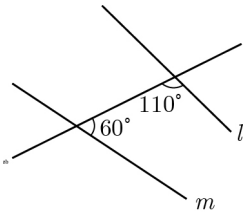
75. ( )



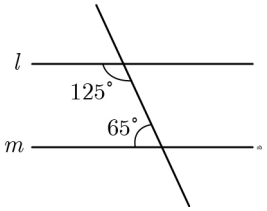
76. ( )



77. ( )



78. ( )



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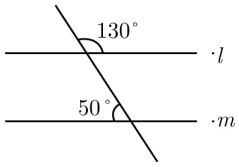
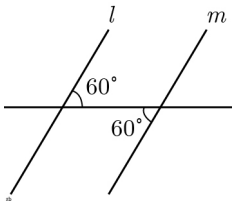
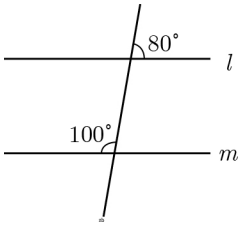
79. ( )



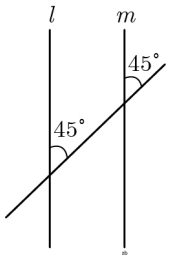
80. ( )



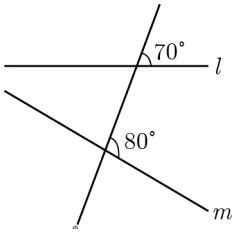
81. ( )



82. ( )

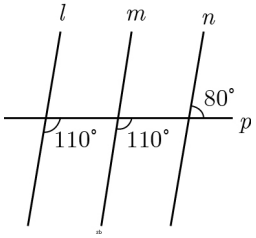


83. ( )

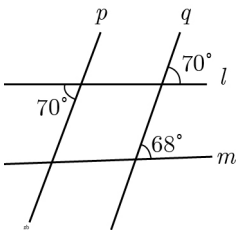


◪ 다음 그림에서 평행한 두 직선을 찾아 기호 //를 사용하여 나타내어라.

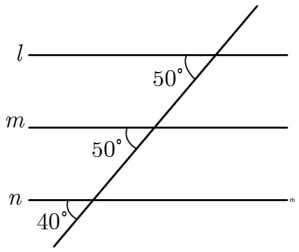
84.



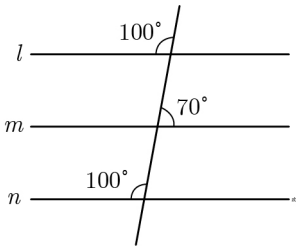
85.



86.



87.



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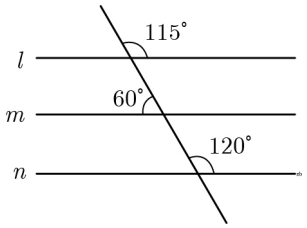
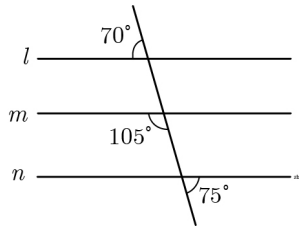
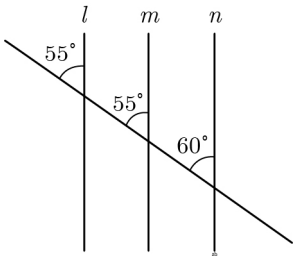
88.



89.

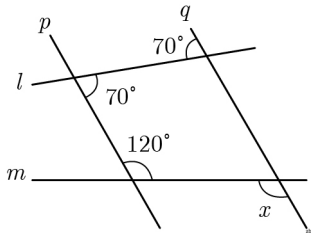


90.



◪ 다음 물음에 답하여라.

91. 다음 그림에서 평행한 두 직선을 찾아 기호 //를 사용하여 나타내고, $\angle x$의 크기를 구하여라.



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정답 및 해설

1) $\angle e$

2) $\angle f$

3) $\angle g$

4) $\angle h$

5) 없다.

6) 없다.

7) $\angle e$

8) $\angle f$

9) $\angle h$

10) $\angle c$

11) $\angle e$

12) $\angle b$

13) $\angle e$

14) $\angle d$

15) $\angle f$

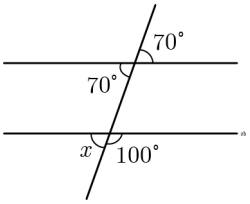
16) $\angle e$

17) 40°

18) 90°

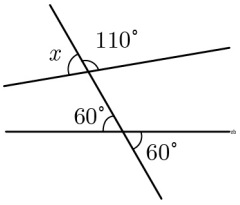
19) 70°

⇨ 맞꼭지각의 성질에 의해 다음 그림에서 $\angle x$의 동위각의 크기는 70°이다.



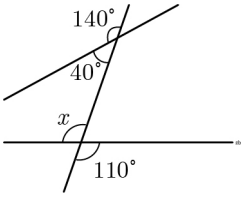
20) 60°

⇨ 맞꼭지각의 성질에 의해 다음 그림에서 $\angle x$의 동위각의 크기는 60°이다.



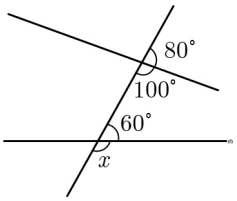
21) 140°

⇨ 다음 그림에서 $\angle x$의 동위각의 크기는 140°이다.



22) 100°

⇨ 다음 그림에서 $\angle x$의 동위각의 크기는 100°이다.



23) 95°

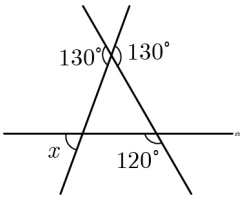
24) 75°

25) 115°

26) 100°

27) 250°

⇨ 다음 그림에서 $\angle x$의 동위각의 크기의 합은 $130^\circ + 120^\circ = 250^\circ$



28) 205°

⇨ $85^\circ + (180^\circ - 60^\circ) = 205^\circ$

29) 242°

⇨ 두 직선 n, m 과 한 직선 l 이 만날 때
$\angle x$ 의 동위각의 크기는 107°
두 직선 l, n 과 한 직선 m 이 만날 때
$\angle x$ 의 동위각의 크기는 $180^\circ - 45^\circ = 135^\circ$
따라서 동위각의 크기의 합은 $107^\circ + 135^\circ = 242^\circ$

30) 290°

⇨ 다음 그림에서 $\angle x$의 동위각의 크기의 합은

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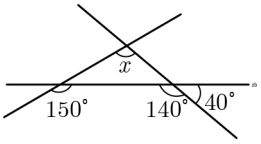
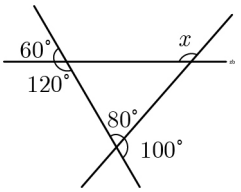
$150^\circ+140^\circ=290^\circ$



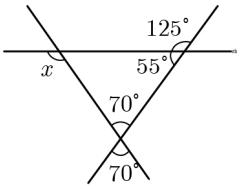
31) 140°

⇨ 다음 그림에서 $\angle x$의 동위각의 크기의 합은 $60^\circ+80^\circ=140^\circ$



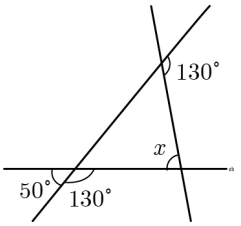
32) 125°

⇨ 다음 그림에서 $\angle x$의 동위각의 크기의 합은 $55^\circ+70^\circ=125^\circ$



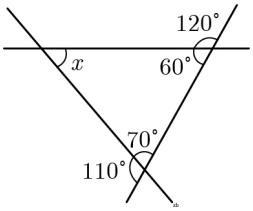
33) 260°

⇨ 다음 그림에서 $\angle x$의 엇각의 크기의 합은 $130^\circ+130^\circ=260^\circ$



34) 230°

⇨ 다음 그림에서 $\angle x$의 엇각의 크기의 합은 $120^\circ+110^\circ=230^\circ$



35) 110°

36) 70°

37) 110°

38) 110°

39) 70°

40) 110°

41) 50°

⇨ $130^\circ=\angle x+80^\circ \quad \therefore \angle x=50^\circ$

42) 100°

⇨ $\angle y=180^\circ-80^\circ=100^\circ$

43) 70°

44) 52°

45) 55°

46) 113°

47) 71°

48) 110°

49) 40°

50) 60°

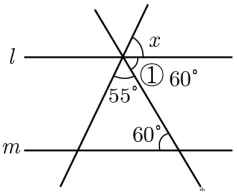
51) 125°

52) 120°

53) 113°

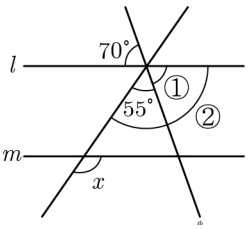
54) 130°

55) 65°



⇨ ② $\angle x+60^\circ+55^\circ=180^\circ \quad \therefore \angle x=65^\circ$

56) 125°



⇨

① 70°

② $70^\circ+55^\circ=\angle x \quad \therefore \angle x=125^\circ$

57) 40°

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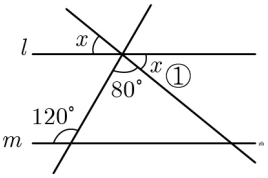
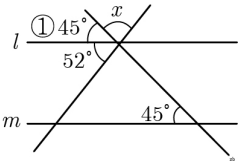


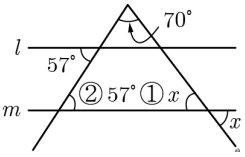
② $\angle x+80^\circ=120^\circ$ ∴ $\angle x=40^\circ$

58) 83°



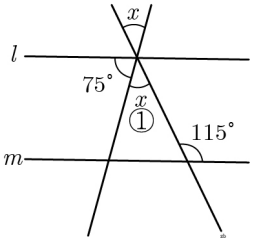
② $\angle x+45^\circ+52^\circ=180^\circ$ ∴ $\angle x=83^\circ$

59) 53°



③ $70^\circ+57^\circ+\angle x=180^\circ$ ∴ $\angle x=53^\circ$

60) 40°

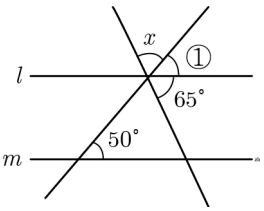


② $75^\circ+\angle x=115^\circ$ ∴ $\angle x=40^\circ$

61) 50°

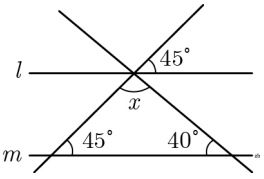
⇨ $\angle a=60^\circ$, $70^\circ+\angle x+60^\circ=180^\circ$ ∴ $\angle x=50^\circ$

62) 65°



② $\angle x+50^\circ+65^\circ=180^\circ$ ∴ $\angle x=65^\circ$

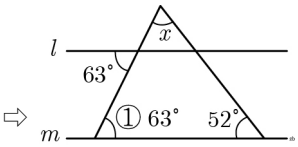
63) 95°



삼각형의 세 내각의 크기의 합은 180°이므로

$\angle x+45^\circ+40^\circ=180^\circ$ ∴ $\angle x=95^\circ$

64) 65°



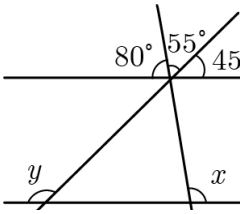
② $\angle x+63^\circ+52^\circ=180^\circ$ ∴ $\angle x=65^\circ$

65) $\angle x=55^\circ$, $\angle y=70^\circ$

66) $\angle x=100^\circ$, $\angle y=135^\circ$

⇨ 다음 그림에서 $\angle x=55^\circ+45^\circ=100^\circ$

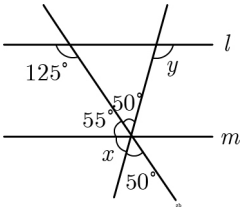
$\angle y=80^\circ+55^\circ=135^\circ$



67) $\angle x=75^\circ$, $\angle y=105^\circ$

⇨ 다음 그림에서 $\angle x+50^\circ=125^\circ$ ∴ $\angle x=75^\circ$

$\angle y=55^\circ+50^\circ=105^\circ$



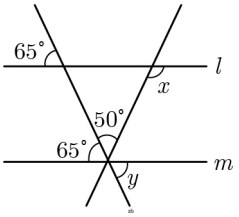
68) $\angle x=105^\circ$, $\angle y=55^\circ$

⇨ 동위각의 크기가 같으므로 $\angle x=105^\circ$

엇각의 크기가 같으므로 $\angle y=55^\circ$

69) $\angle x=115^\circ$, $\angle y=65^\circ$

⇨ 다음 그림에서 $\angle x=65^\circ+50^\circ=115^\circ$, $\angle y=65^\circ$



70) $\angle x=130^\circ$, $\angle y=70^\circ$

71) ○

72) ×

73) ○

74) ×

75) ×

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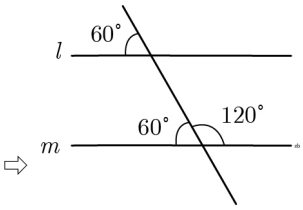
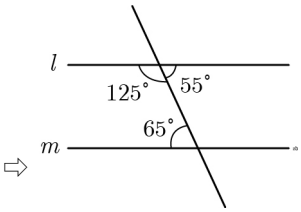
76) ○



⇨ → l, m이 평행하다.

77) ×

78) ×



⇨ → l, m이 평행하지 않다.

79) ○

80) ○

81) ○

82) ○

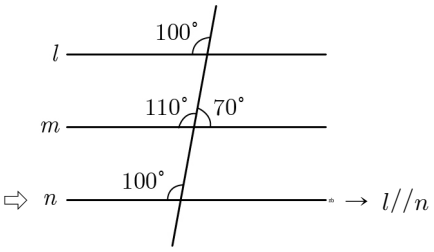
83) ×

84) $l//m$

85) $p//q$

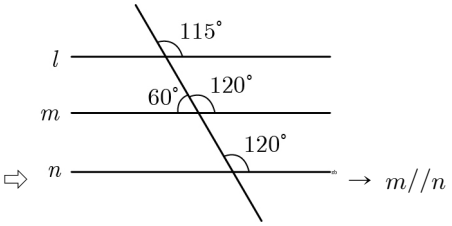
86) $l//m$

87) $l//n$



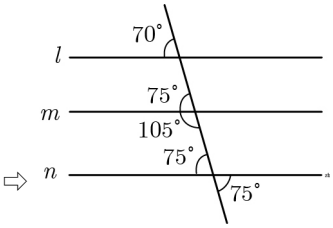
⇨ → $l//n$

88) $m//n$



⇨ → $m//n$

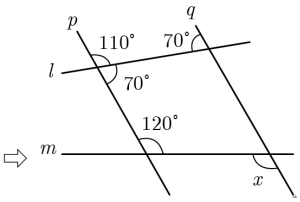
89) $m//n$



⇨ → $m//n$

90) $l//m$

91) $p//q$, 120°



⇨ 엇각의 크기가 같으므로 $p//q$ ∴ $\angle x = 120^\circ$

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