

5-1-4.피타고라스 정리를 이용한 도형의 성질

[영역] 5.기하





◇「콘텐츠산업 진흥법 시행령」제33조에 의한 표시

1) 제작연월일: 2016-10-25

2) 제작자 : 교육지대㈜

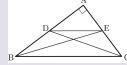
3) 이 콘텐츠는 「콘텐츠산업 진흥법」에 따라 최초 제작일부터 5년간 보호됩니다.

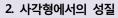
◇「콘텐츠산업 진흥법」외에도「저작권법」에 의하여 보호되는 콘텐츠의 경우, 그 콘텐츠의 전부 또는 일부를 무단으로 복제하거나 전송하는 것은 콘텐츠산업 진흥법 외에도 저작권법에 의한 법적 책임을 질 수 있습니다.

계산시 참고사항

1. 직각삼각형에서의 성질

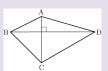
- 1) 직각삼각형의 닮음을 이용한 성질 $\angle A = 90$ °인 직각삼각형 ABC에서 $\overline{AD} \perp \overline{BC}$ 일 때
- (1) 피타고라스의 정리 $\Rightarrow a^2 = b^2 + c^2$
- (2) 넓이 관계 ⇒ bc = ah
- (3) 닮음 관계 $\Rightarrow c^2 = ax$, $b^2 = ay$, $h^2 = xy$
- 2) 피타고라스 정리를 이용한 직각삼각형의 성질 $\angle A = 90$ °인 직각삼각형 ABC에서 점 D, E가 각각 \overline{AB} , \overline{AC} 위에 있을 때, $\overline{DE}^2 + \overline{BC}^2 = \overline{BE}^2 + \overline{CD}^2$





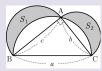
1) 두 대각선이 직교하는 사각형의 성질 \square ABCD에서 두 대각선이 직교할 때, $\overline{AB}^2 + \overline{CD}^2 = \overline{AD}^2 + \overline{BC}^2$

2) 직사각형에서의 성질 직사각형 ABCD의 내부에 임의의 점 P가 있을 때, $\overline{AP}^2 + \overline{CP}^2 = \overline{BP}^2 + \overline{DP}^2$









참고

- △ABC ∽ △DBA 에서 AB: DB = BC: BA 이므로
- △ABC ∽ △DAC 에서 \overline{BC} : $\overline{AC} = \overline{AC}$: \overline{DC} 이므로 $b^2 = ay$
- △DBA ∽ △DAC 에서 BD: AD = AD: CD 이므로 $\therefore h^2 = xy$
- △ABC의 넓이에서 $\triangle ABC = \frac{1}{2}bc = \frac{1}{2}ah$ 이므로

3. 원에서의 성질

1) 직각삼각형에서의 세 반원 사이의 관계 직각삼각형 ABC에서 세 변을 각각 지름으로 하는 반원의 넓이를 S_1 , S_2 , S_3 이라 하면 $S_1 + S_2 = S_3$ 이다.

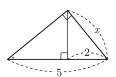
2) 히포크라테스의 원의 넓이 오른쪽 그림과 같이 직각삼각형 ABC의 세 변을 지름으로 하는 세 반원에서 (색칠한 부분의 넓이)= \triangle ABC = $\frac{1}{2}bc$



직각삼각형에서의 성질

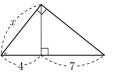
☑ 다음 그림에서 x의 값을 구하여라.

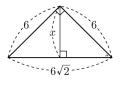
1.

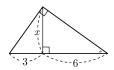


4.

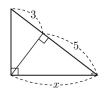
3.



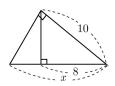




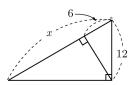




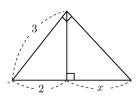
6.



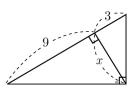
7.



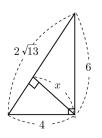
8.



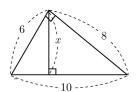
9.



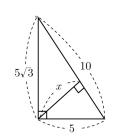
10.



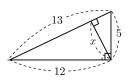
11.



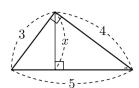
12.



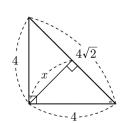
13.

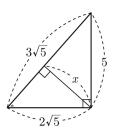


14.



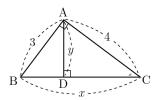
15.



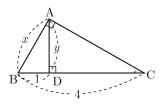


$lacksymbol{\square}$ 다음 그림과 같은 직각삼각형에서 $x,\ y$ 의 값을 각각 구하여라.

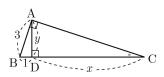
17.



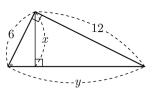
18.



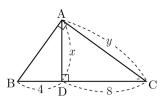
19.



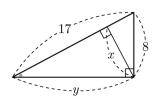
20.



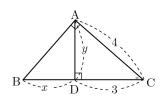
21.



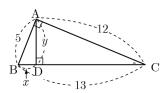
22.



23.

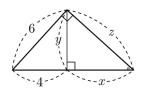


24.

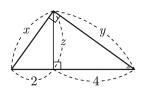


 $lacksymbol{\square}$ 다음 그림에서 $x,\ y,\ z$ 의 값을 각각 구하여라.

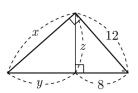
25.

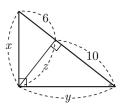


26.



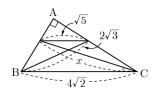
27.



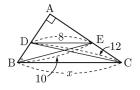


ightharpoonup 다음 그림과 같은 직각삼각형 m ABC에서 $m \it x$ 의 값을 구하여라.

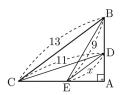
29.



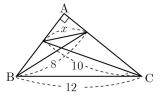
30.



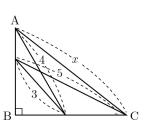
31.



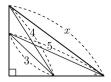
32.



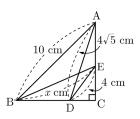
33.



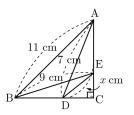
34.



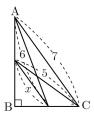
35.



36.

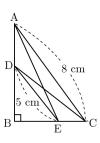


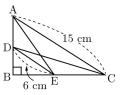
37.



ightharpoonup 다음 그림과 같은 직각삼각형 ABC에서 $\overline{AE}^2 + \overline{CD}^2$ 의 값을 구하여라.

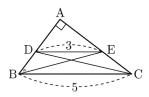
38.



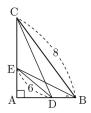


 \square 다음 그림과 같은 직각삼각형 \triangle \triangle \triangle \triangle \triangle \triangle \triangle \triangle 구하여라.

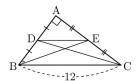
40.



41.



42.

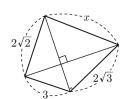


8

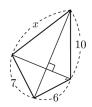
사각형에서의 성질

☑ 다음 그림과 같은 사각형 ABCD에서 x의 값을 구하여라.

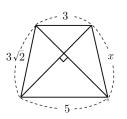
43.



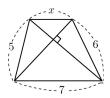
44.



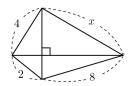
45.



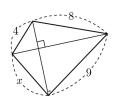
46.



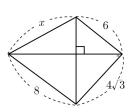
47.

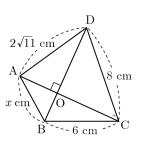


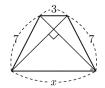
48.



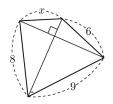
49.



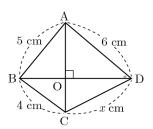




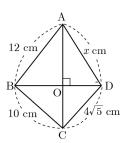
52.



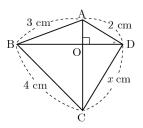
53.



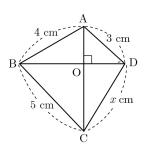
54.



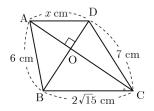
55.



56.

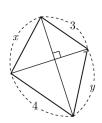


57.

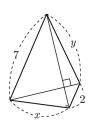


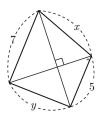
 $lacksymbol{\square}$ 다음 그림에서 x^2+y^2 의 값을 구하여라.

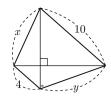
58.



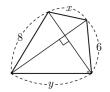
59.





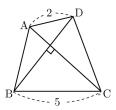


62.

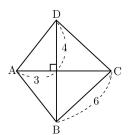


 \square 다음 그림과 같이 \square ABCD의 두 대각선이 직교할 때, $\overline{AB}^2 + \overline{CD}^2$ 의 값을 구하여라.

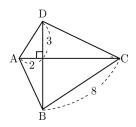
63.



64.

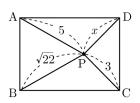


65.

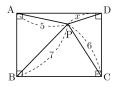


 \square 다음 그림과 같이 직사각형 ABCD의 내부에 한 점 \square P가 있을 때, \square \square 있을 구하여라.

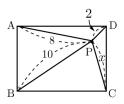
66.



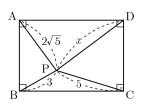
67.

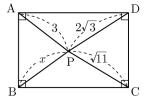


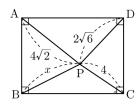
68.



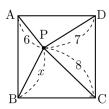
69.



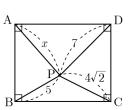




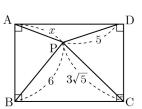
72.



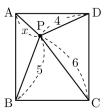
73.



74.

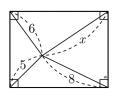


75.

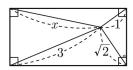


☑ 다음 그림에서 x의 값을 구하여라.

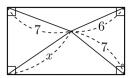
76.



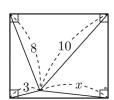
77.



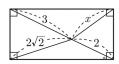
78.

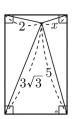


79.



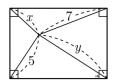
80.



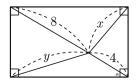


ightharpoonup 다음 그림에서 x^2+y^2 의 값을 구하여라.

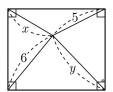
82.



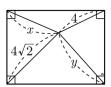
83.



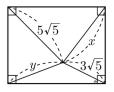
84.



85.

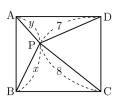


86.

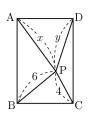


☑ 다음 그림과 같이 직사각형 ABCD의 내부에 한 점 P가 있을 때, x^2-y^2 의 값을 구하여라.

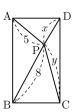
87.

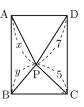


88.



89.



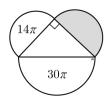




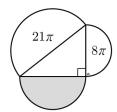
원에서의 성질

☑ 다음 그림과 같이 직각삼각형 ABC의 세 변을 각각 지름으로 하는 반원을 그렸을 때, 색칠한 부분의 넓이를 구하여라.

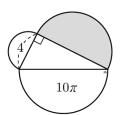
91.



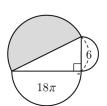
92.



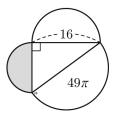
93.



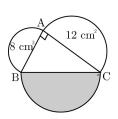
94.



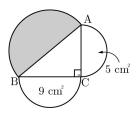
95.



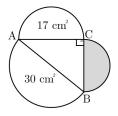
96.



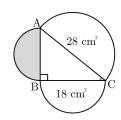
97.



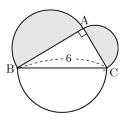
98.

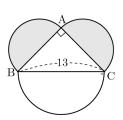


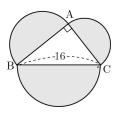
99.

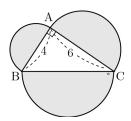


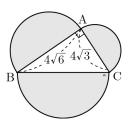
100

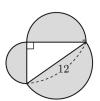




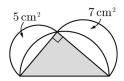


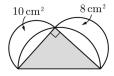


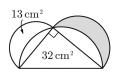


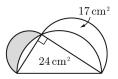


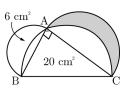
☑ 다음 그림과 같이 직각삼각형 ABC의 세 변을 각각 지름으로 하는 반원을 그렸을 때, 색칠한 부분의 넓이를 구하여라.

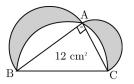


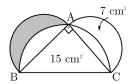


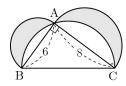


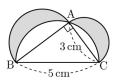


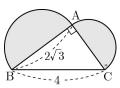


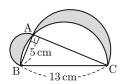


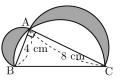


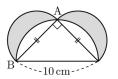


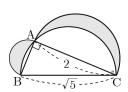


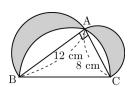














정답 및 해설

- 1) $\sqrt{10}$
- $\Rightarrow x^2 = 2 \times 5$ $\therefore x = \sqrt{10} \ (x > 0)$
- 2) $3\sqrt{2}$
- $\Rightarrow x^2 = 3 \times 6$ $\therefore x = 3\sqrt{2} \ (x > 0)$
- 3) $2\sqrt{11}$
- $\Rightarrow x^2 = 4 \times (4+7)$ $\therefore x = 2\sqrt{11} (x > 0)$
- 4) $3\sqrt{2}$
- $\Rightarrow 6 \times 6 = 6\sqrt{2} \times x \qquad \therefore x = 3\sqrt{2}$
- 5) $2\sqrt{10}$
- $\Rightarrow x^2 = 5 \times (5+3)$ $\therefore x = 2\sqrt{10} (x > 0)$
- $\Rightarrow 10^2 = x \times 8 \qquad \therefore x = \frac{25}{2}$
- 7) 24
- $\Rightarrow 12^2 = x \times 6 \qquad \therefore x = 24$
- 8) $\frac{5}{2}$
- $\Rightarrow 3^2 = 2 \times (2+x) \qquad \therefore x = \frac{5}{2}$
- 9) $3\sqrt{3}$
- $\Rightarrow x^2 = 9 \times 3 \qquad \therefore x = 3\sqrt{3}$
- 10) $\frac{12\sqrt{13}}{13}$
- $\Rightarrow 4 \times 6 = 2\sqrt{13} \times x \qquad \therefore x = \frac{12\sqrt{13}}{13}$
- 11) $\frac{24}{5}$
- $\Rightarrow 6 \times 8 = 10 \times x \qquad \therefore x = \frac{24}{5}$
- 12) $\frac{5\sqrt{3}}{2}$
- $\Rightarrow 5 \times 5\sqrt{3} = 10 \times x \qquad \therefore x = \frac{5\sqrt{3}}{2}$
- 13) $\frac{60}{13}$
- $\Rightarrow 12 \times 5 = 13 \times x \qquad \therefore x = \frac{60}{13}$

- 14) $\frac{12}{5}$
- $\Rightarrow 3 \times 4 = 5 \times x \qquad \therefore \quad x = \frac{12}{5}$
- 15) $2\sqrt{2}$
- $\Rightarrow 4 \times 4 = 4\sqrt{2} \times x \qquad \therefore x = 2\sqrt{2}$
- 16) $\frac{10}{3}$
- $\Rightarrow 2\sqrt{5} \times 5 = 3\sqrt{5} \times x$ $\therefore x = \frac{10}{2}$
- 17) $x = 5, y = \frac{12}{5}$
- $\Rightarrow x = \sqrt{3^2 + 4^2} = 5$ $3\times4=5\times y$ 에서 $y=\frac{12}{5}$
- 18) $x = 2, y = \sqrt{3}$
- $\Rightarrow x^2 = 1 \times 40 | M \quad x = 2 (: x > 0)$ $y^2 = 1 \times 30 | M \quad y = \sqrt{3} \ (\because y > 0)$
- 19) $x = 8, y = 2\sqrt{2}$
- $\Rightarrow 3^2 = 1 \times (1+x) \text{ on } x = 8$ $y^2 = 1 \times 8$ 에서 $y = 2\sqrt{2}$ (: y > 0)
- 20) $x = \frac{12\sqrt{5}}{5}$, $y = 6\sqrt{5}$
- $\Rightarrow y = \sqrt{6^2 + 12^2} = 6\sqrt{5}$
 - $6 \times 12 = 6\sqrt{5} \times x \qquad \therefore x = \frac{12\sqrt{5}}{5}$
- 21) $x = 4\sqrt{2}, y = 4\sqrt{6}$
- $\Rightarrow x^2 = 4 \times 80 | \text{M} \quad x = 4\sqrt{2} \quad (\because x > 0)$ $y^2 = 8 \times 12$ 에서 $y = 4\sqrt{6}$ (: y > 0)
- 22) $x = \frac{120}{17}$, y = 15
- $\Rightarrow y = \sqrt{17^2 8^2} = 15$
 - $8 \times 15 = 17 \times x \qquad \therefore x = \frac{120}{17}$
- 23) $x = \frac{7}{3}, y = \sqrt{7}$
- $\Rightarrow 4^2 = 3 \times (3+x) \text{ on } x = \frac{7}{3}$
 - $y^2 = \frac{7}{3} \times 30 \parallel M \parallel y = \sqrt{7} \quad (\because y > 0)$
- 24) $x = \frac{25}{13}, y = \frac{60}{13}$

$$\Rightarrow 5^2 = x \times 130 \text{MM} \quad x = \frac{25}{13}$$
$$5 \times 12 = 13 \times y \text{MM} \quad y = \frac{60}{13}$$

25)
$$x = 5$$
, $y = 2\sqrt{5}$, $z = 3\sqrt{5}$
 $\Rightarrow 6^2 = 4 \times (4+x)$ $\therefore x = 5$
 $y^2 = 4x$ $\therefore y = 2\sqrt{5} \ (y > 0)$
 $z^2 = x(x+4)$ $\therefore z = 3\sqrt{5} \ (z > 0)$

26)
$$x = 2\sqrt{3}$$
, $y = 2\sqrt{6}$, $z = 2\sqrt{2}$
 $\Rightarrow x^2 = 2 \times (2+4)$ $\therefore x = 2\sqrt{3} \ (x > 0)$
 $y^2 = 4 \times (4+2)$ $\therefore y = 2\sqrt{6} \ (y > 0)$
 $z^2 = 2 \times 4$ $\therefore z = 2\sqrt{2} \ (z > 0)$

27)
$$x = 6\sqrt{5}$$
, $y = 10$, $z = 4\sqrt{5}$
 $\Rightarrow 12^2 = 8 \times (8+y)$ $\therefore y = 10$
 $x^2 = 10 \times (10+8)$ $\therefore x = 6\sqrt{5} \ (x > 0)$
 $z^2 = 10 \times 8$ $\therefore z = 4\sqrt{5} \ (z > 0)$

28)
$$x = 4\sqrt{6}$$
, $y = 4\sqrt{10}$, $z = 2\sqrt{15}$
 $\Rightarrow x^2 = 6 \times (6+10)$ $\therefore x = 4\sqrt{6} \ (x > 0)$
 $y^2 = 10 \times (10+6)$ $\therefore y = 4\sqrt{10} \ (y > 0)$
 $z^2 = 10 \times 6$ $\therefore z = 2\sqrt{15} \ (z > 0)$

29) 5

$$(\sqrt{5})^2 + (4\sqrt{2})^2 = (2\sqrt{3})^2 + x^2 \text{ of } x^2 = 25 \qquad \therefore x = 5 \ (\because x > 0)$$

30)
$$6\sqrt{5}$$

⇒ $\overline{DE^2 + BC^2} = \overline{BE^2 + CD^2}$ 0| $\Box \Xi$
 $8^2 + x^2 = 10^2 + 12^2$ ∴ $x = 6\sqrt{5}$ $(x > 0)$

31)
$$\sqrt{33}$$

 $\Rightarrow \overline{DE^2 + BC^2} = \overline{BE^2 + CD^2}$ 이므로
 $x^2 + 13^2 = 11^2 + 9^2$ $\therefore x = \sqrt{33} (x > 0)$

32)
$$2\sqrt{5}$$

$$\Rightarrow x^2 + 12^2 = 8^2 + 10^2 \text{oH Ad}$$

$$x^2 = 20 \qquad \therefore x = 2\sqrt{5} \; (\because \; x > 0)$$

33)
$$4\sqrt{2}$$

$$\Rightarrow 3^2 + x^2 = 5^2 + 4^2 \text{ odd } \text{ Add }$$

$$x^2 = 32 \qquad \therefore x = 4\sqrt{2} \; (\because \; x > 0)$$

34)
$$4\sqrt{2}$$

 $\Rightarrow 3^2 + x^2 = 4^2 + 5^2$ $\therefore x = 4\sqrt{2} \ (x > 0)$
35) 6
 $\Rightarrow 10^2 + 4^2 = x^2 + (4\sqrt{5})^2, \ x^2 = 36$ $\therefore x = 6$

36) 3
$$\Rightarrow 11^2 + x^2 = 7^2 + 9^2, \ x^2 = 9 \qquad \therefore \ x = 3$$

37)
$$2\sqrt{3}$$
 $\Rightarrow x^2 + 7^2 = 5^2 + 6^2$ oil Al $x^2 = 12$ $\therefore x = 2\sqrt{3} \ (\because x > 0)$

38) 89
$$\Rightarrow \overline{AE}^2 + \overline{CD}^2 = \overline{AC}^2 + \overline{DE}^2 = 8^2 + 5^2 = 89$$
39) 261

 $\Rightarrow \overline{AE}^2 + \overline{CD}^2 = \overline{AC}^2 + \overline{DE}^2 = 15^2 + 6^2 = 261$

$$\Rightarrow \overline{BE^2 + CD^2} = 6^2 + 8^2 = 100$$
42) 180

41) 100

$$\Rightarrow \overline{DE} = \frac{1}{2} \times \overline{BC} = 60 | \Box \Xi$$

$$\overline{BE^2} + \overline{CD^2} = 6^2 + 12^2 = 180$$

43)
$$\sqrt{11}$$

 $\Rightarrow x^2 + 3^2 = (2\sqrt{2})^2 + (2\sqrt{3})^2$
 $x^2 = 11$ $\therefore x = \sqrt{11} \ (x > 0)$

44)
$$\sqrt{113}$$

 $\Rightarrow x^2 + 6^2 = 7^2 + 10^2$
 $x^2 = 113$ $\therefore x = \sqrt{113} (x > 0)$

45) 4

$$\Rightarrow (3\sqrt{2})^2 + x^2 = 3^2 + 5^2$$

 $x^2 = 16$ $\therefore x = 4$

46)
$$2\sqrt{3}$$

 $\Rightarrow 5^2 + 6^2 = x^2 + 7^2$
 $x^2 = 12$ $\therefore x = 2\sqrt{3}$

47)
$$2\sqrt{19}$$

$$\Rightarrow 4^{2} + 8^{2} = 2^{2} + x^{2}$$

$$x^{2} = 76 \qquad \therefore x = 2\sqrt{19}$$

48)
$$\sqrt{33}$$

 $\Rightarrow 4^2 + 9^2 = x^2 + 8^2$
 $x^2 = 33$ $\therefore x = \sqrt{33} (x > 0)$
49) $2\sqrt{13}$
 $\Rightarrow x^2 + (4\sqrt{3})^2 = 8^2 + 6^2$

$$x^2 = 52$$
 $\therefore x = 2\sqrt{3}$

- 50) 4
- $\Rightarrow x^2 + 8^2 = (2\sqrt{11})^2 + 6^2 \text{old}$ $x^2 = 16 \qquad \therefore x = 4 (\because x > 0)$
- 51) $\sqrt{89}$
- $\Rightarrow 3^2 + x^2 = 7^2 + 7^2$ $x^2 = 89 \qquad \therefore \quad x = \sqrt{89} \quad (x > 0)$
- 52) $\sqrt{19}$
- $\Rightarrow x^2 + 9^2 = 8^2 + 6^2 \qquad \therefore x = \sqrt{19} (x > 0)$
- 53) $3\sqrt{3}$
- $\begin{array}{c} \Longrightarrow \ 5^2+x^2=6^2+4^2 \\ \circlearrowleft \ x^2=27 \qquad \therefore x=3 \sqrt{3} \ (\because \ x>0) \end{array}$
- 54) $2\sqrt{31}$
- $\Rightarrow 12^{2} + (4\sqrt{5})^{2} = x^{2} + 10^{2} \text{old M}$ $x^{2} = 124 \qquad \therefore x = 2\sqrt{31} \ (\because x > 0)$
- 55) $\sqrt{11}$
- $\Rightarrow 3^2+x^2=2^2+4^2 \text{OM M}$ $x^2=11 \qquad \therefore x=\sqrt{11} \; (\because \; x>0)$
- 56) $3\sqrt{2}$
- $\Rightarrow 4^2 + x^2 = 3^2 + 5^2 \text{ oll A}$ $x^2 = 18 \qquad \therefore x = 3\sqrt{2} \ (\because x > 0)$
- 57) 5
- $\Rightarrow 6^{2} + 7^{2} = x^{2} + (2\sqrt{15})^{2} \text{ odd}$ $x^{2} = 25 \qquad \therefore x = 5 (\because x > 0)$
- 58) 25
- $\Rightarrow x^2 + y^2 = 4^2 + 3^2 = 25$
- 59) 53
- $\Rightarrow x^2 + y^2 = 7^2 + 2^2 = 53$
- 60) 74
- $\Rightarrow x^2 + y^2 = 7^2 + 5^2 = 74$
- 61) 116
- $\Rightarrow x^2 + y^2 = 4^2 + 10^2 = 116$
- 62) 100
- $\Rightarrow x^2 + y^2 = 8^2 + 6^2 = 100$
- 63) 29
- $\Rightarrow \overline{AB}^2 + \overline{CD}^2 = \overline{AD}^2 + \overline{BC}^2 = 2^2 + 5^2 = 29$
- 64) 61

$$\Rightarrow \overline{AD} = \sqrt{4^2 + 3^2} = 5$$
이므로
 $\overline{AB}^2 + \overline{CD}^2 = \overline{AD}^2 + \overline{BC}^2 = 5^2 + 6^2 = 61$

- 65) 77
- \Rightarrow $\overline{AD} = \sqrt{2^2 + 3^2} = \sqrt{13}$ 이므로 $\overline{AB}^2 + \overline{CD}^2 = \overline{AD}^2 + \overline{BC}^2 = (\sqrt{13})^2 + 8^2 = 77$
- 66) $2\sqrt{3}$
- $\Rightarrow 5^2 + 3^2 = (\sqrt{22})^2 + x^2, \quad x^2 = 12 \qquad \therefore \quad x = 2\sqrt{3}$
- 67) $2\sqrt{3}$
- $\Rightarrow 5^2 + 6^2 = 7^2 + x^2 \text{ old M}$ $x^2 = 12 \qquad \therefore x = 2\sqrt{3} \ (\because x > 0)$
- 68) $2\sqrt{10}$
- $\Rightarrow 8^2 + x^2 = 10^2 + 2^2, \quad x^2 = 40 \qquad \therefore \quad x = 2\sqrt{10}$
- 69) 6
- $\Rightarrow (2\sqrt{5})^2 + 5^2 = 3^2 + x^2 \text{OM Ad}$ $x^2 = 36 \qquad \therefore x = 6 (\because x > 0)$
- 70) $2\sqrt{2}$
- $\Rightarrow 3^2 + (\sqrt{11})^2 = x^2 + (2\sqrt{3})^2 \text{ of } A$ $x^2 = 8 \qquad \therefore x = 2\sqrt{2} \ (\because x > 0)$
- 71) $2\sqrt{6}$
- $\Rightarrow (4\sqrt{2})^2 + 4^2 = x^2 + (2\sqrt{6})^2 \text{ on At}$ $x^2 = 42 \qquad \therefore x = 2\sqrt{6} \ (\because x > 0)$
- 72) $\sqrt{51}$
- $\Rightarrow 6^2 + 8^2 = x^2 + 7^2, \ x^2 = 51 \qquad \therefore \ x = \sqrt{51}$
- 73) $\sqrt{42}$
- $\Rightarrow x^2 + (4\sqrt{2})^2 = 5^2 + 7^2 \text{ on } A$ $x^2 = 42 \qquad \therefore x = \sqrt{42} \ (\because x > 0)$
- 74) 4
- $\begin{array}{c} \Longrightarrow \ x^2 + \big(3\sqrt{5}\,\big)^2 = 6^2 + 5^2 \Theta | \, \mathrm{A} | \\ x^2 = 16 \qquad \therefore x = 4 \, (\because \ x > 0) \end{array}$
- 75) $\sqrt{5}$
- $\Rightarrow x^2 + 6^2 = 5^2 + 4^2, \ x^2 = 5 \qquad \therefore \ x = \sqrt{5}$
- 76) $5\sqrt{3}$
- $\Rightarrow 6^2 + 8^2 = 5^2 + x^2$ $x^2 = 75 \qquad \therefore \quad x = 5\sqrt{3} \ (x > 0)$
- 77) $2\sqrt{2}$
- $\Rightarrow x^2 + (\sqrt{2})^2 = 3^2 + 1^2$
 - $x^2 = 8$ $\therefore x = 2\sqrt{2} \ (x > 0)$

78) $\sqrt{62}$

$$\Rightarrow 7^2 + 7^2 = x^2 + 6^2$$
$$x^2 = 62 \qquad \therefore x = \sqrt{62} \ (x > 0)$$

79) $3\sqrt{5}$

$$\Rightarrow 8^2 + x^2 = 3^2 + 10^2$$
$$x^2 = 45 \qquad \therefore x = 3\sqrt{5} \ (x > 0)$$

80) $\sqrt{5}$

$$\Rightarrow x^2 + (2\sqrt{2})^2 = 3^2 + 2^2 \quad \therefore x = \sqrt{5} \ (x > 0)$$

81) $\sqrt{2}$

$$\Rightarrow 2^2 + 5^2 = (3\sqrt{3})^2 + x^2$$
$$x^2 = 2 \qquad \therefore x = \sqrt{2} \ (x > 0)$$

82) 74

$$\Rightarrow x^2 + y^2 = 5^2 + 7^2 = 74$$

83) 80

$$\Rightarrow x^2 + y^2 = 8^2 + 4^2 = 80$$

84) 61

$$\Rightarrow x^2 + y^2 = 6^2 + 5^2 = 61$$

85) 48

$$\Rightarrow x^2 + y^2 = (4\sqrt{2})^2 + 4^2 = 48$$

86) 170

$$\Rightarrow x^2 + y^2 = (5\sqrt{5})^2 + (3\sqrt{5})^2 = 170$$

87) 15

$$\Rightarrow x^2 + 7^2 = y^2 + 8^2$$

$$\therefore x^2 - y^2 = 64 - 49 = 15$$

88) 20

$$\Rightarrow x^2 + 4^2 = y^2 + 6^2$$
$$\therefore x^2 - y^2 = 36 - 16 = 20$$

89) -39

$$\Rightarrow x^2 + 8^2 = 5^2 + y^2$$
$$\therefore x^2 - y^2 = 25 - 64 = -39$$

90) 24

$$\Rightarrow x^2 + 5^2 = y^2 + 7^2$$
$$\therefore x^2 - y^2 = 49 - 25 = 24$$

91) 16π

$$\Rightarrow$$
 (색칠한 부분의 넓이)= $30\pi-14\pi=16\pi$

92) 13π

$$\Rightarrow$$
 (색칠한 부분의 넓이)= $21\pi-8\pi=13\pi$

93) 8π

94) $\frac{45}{2}\pi$

다 지름이 6인 반원의 넓이는
$$\frac{1}{2} \times \pi \times 3^2 = \frac{9}{2}\pi$$

$$\therefore$$
 (색칠한 부분의 넓이)= $18\pi + \frac{9}{2}\pi = \frac{45}{2}\pi$

95) 17π

$$ightharpoonup$$
 지름이 16 인 반원의 넓이는 $\frac{1}{2} imes \pi imes 8^2 = 32\pi$ $ightharpoonup$: (색칠한 부분의 넓이)= $49\pi - 32\pi = 17\pi$

96) 20cm²

$$\Rightarrow 8+12=20(\text{cm}^2)$$

97) 14cm²

$$\Rightarrow 9+5=14 \text{ (cm}^2)$$

98) 13cm²

$$\Rightarrow 30-17=13 \text{ (cm}^2)$$

99) 10cm²

$$\Rightarrow 28 - 18 = 10 \text{ cm}^2$$

100) $\frac{9}{2}\pi$

 \Rightarrow (색칠한 부분의 넓이) $=(\overline{BC} \stackrel{?}{=} \text{ 지름으로 하는 반원의 넓이})$ $=\frac{1}{2} \times \pi \times \left(\frac{6}{2}\right)^2 = \frac{9}{2}\pi$

101) $\frac{169}{8}\pi$

$$\Rightarrow$$
 (색칠한 부분의 넓이)
=(\overline{BC} 를 지름으로 하는 반원의 넓이)
= $\frac{1}{2} \times \pi \times \left(\frac{13}{2}\right)^2 = \frac{169}{8}\pi$

102) 64π

$$ightharpoonup (색칠한 부분의 넓이) = 2 imes (BC 를 지름으로 하는 반원의 넓이) = 2 imes $\left\{ \frac{1}{2} imes \pi imes \left(\frac{16}{2} \right)^2 \right\}$ = $2 imes 32 \pi = 64 \pi$$$

103) 13π

$$\overrightarrow{BC} = \sqrt{4^2 + 6^2} = 2\sqrt{13}$$
이므로 (색칠한 부분의 넓이)

$$=2 imes(\overline{\mathrm{BC}}$$
를 지름으로 하는 반원의 넓이)
$$=2 imes\left\{\frac{1}{2} imes\pi imes\left(\frac{2\sqrt{13}}{2}\right)^2\right\}$$

$$=2 imes\frac{13}{2}\pi=13\pi$$

- 104) 36π
- 105) 36π
- ⇒ (지름이 12인 반원의 넓이)= $\frac{1}{2} \times \pi \times 6^2 = 18\pi$ ∴ (색칠한 부분의 넓이)= $18\pi + 18\pi = 36\pi$
- 106) 12 cm²
- ⇒ (색칠한 부분의 넓이)=5+7=12(cm²)
- 107) 18cm²
- 108) 19cm²
- ⇒ (색칠한 부분의 넓이)=32-13=19(cm²)
- 109) 7cm²
- ⇒ (색칠한 부분의 넓이)=24-17=7(cm²)
- 110) 14cm²
- $\Rightarrow 20 6 = 14 (\text{cm}^2)$
- 111) 12cm²
- 112) 8cm²
- $\Rightarrow 15-7=8 \text{ cm}^2$
- 113) 6cm²
- □ AB = √5²-3²=4(cm)이므로
 ∴ (색칠한 부분의 넓이)=(△ABC의 넓이)
 = 1/2 × 3 × 4 = 6 (cm²)
- 114) 30cm²
- ☆ AC = √13²-5²=12(cm)
 ∴ (색칠한 부분의 넓이)=(△ABC의 넓이)
 = 1/2 × 12 × 5 = 30(cm²)
- 115) 25cm²

$$ightarrow \overline{AB} = \overline{AC} = x$$
cm 라고 하면 $x^2 + x^2 = 100, \ x^2 = 50$ $\therefore \ x = 5\sqrt{2} \ (x > 0)$ $\therefore \ (색칠한 부분의 넓이) = (\triangle ABC의 넓이)$ $= \frac{1}{2} \times 5\sqrt{2} \times 5\sqrt{2} = 25 (\text{cm}^2)$

- 116) 1
- $ightharpoonup \overline{AB} = \sqrt{(\sqrt{5})^2 2^2} = 1$ 이므로 $(색칠한 부분의 넓이) = \Delta ABC = \frac{1}{2} \times 1 \times 2 = 1$
- 117) 48cm²
- $\Rightarrow \frac{1}{2} \times 12 \times 8 = 48 \text{ (cm}^2)$
- 118) 24
- \Rightarrow (색칠한 부분의 넓이)= \triangle ABC= $\frac{1}{2} \times 6 \times 8 = 24$
- 119) 4π

$$\Rightarrow$$
 $\overline{AC} = \sqrt{4^2 - \left(2\sqrt{3}\right)^2} = 20$ | 므로 (색칠한 부분의 넓이) $= \frac{1}{2} \times (\sqrt{3})^2 \pi + \frac{1}{2} \times 1^2 \pi = 4\pi$

- 120) 16cm²
- $\Rightarrow \frac{1}{2} \times 4 \times 8 = 16 \text{ (cm}^2)$