

Answers to Grade Grabber 8

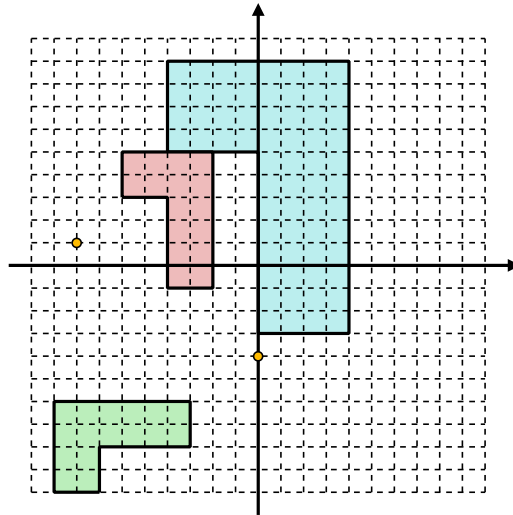
Answer 1

(i) The green shape below

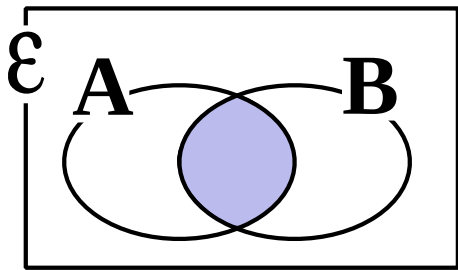
[2 marks]

(ii) The blue shape below

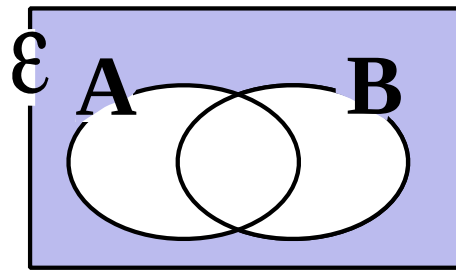
[2 marks]



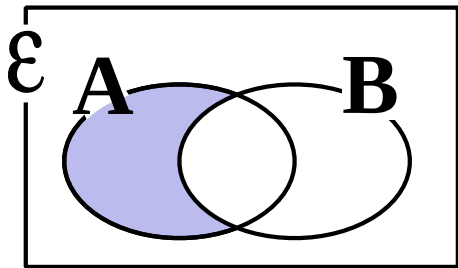
Answer 2



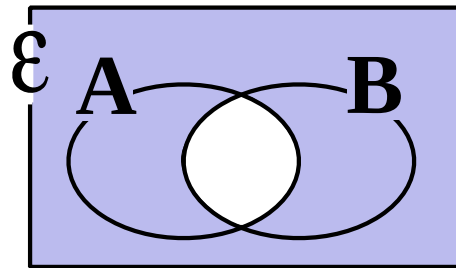
(i) $A \cap B$



(ii) $(A \cup B)'$



(iii) $A \cap B'$



(iv) $A' \cup B'$

[4 marks]

Answer 3**(i)**

$$\begin{aligned}
 V_{HOLED} &= (2x)^3 - x \times x \times 2x \\
 &= 8x^3 - 2x^3 \\
 &= 6x^3 \\
 &= 6 \times 3.5^3 \\
 &= 257.25 \text{ cm}^3
 \end{aligned}$$

[3 marks]**(ii)**

$$\begin{aligned}
 \text{Surface Area} &= 6 \times (2x)^2 - 2x^2 + 4 \times x \times 2x \\
 &= 24x^2 - 2x^2 + 8x^2 \\
 &= 30x^2 \\
 &= 30 \times 3.5^2 \\
 &= 367.5 \text{ cm}^2
 \end{aligned}$$

[3 marks]**Answer 4**

(i) $\sqrt{50}$

$= 5\sqrt{2}$

(ii) $\sqrt{6} \times \sqrt{48}$

$$\begin{aligned}
 &= \sqrt{3} \sqrt{2} \times \sqrt{16} \sqrt{3} \\
 &= 12\sqrt{2}
 \end{aligned}$$

(iii) $\frac{14}{\sqrt{2}}$

$$\begin{aligned}
 &= \frac{14}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} \\
 &= 7\sqrt{2}
 \end{aligned}$$

[1, 1, 1 marks]**Answer 5**

(a) (i) $\angle ACB = 29^\circ$

[1 mark]

(ii) An angle at the circumference is half the angle at the centre
 (when both subtends the same arc)
 “subtend” means “stand on”

[1 mark]

(b) (i) $\angle BCD = 119^\circ$

[1 mark]

(ii) An angle that subtends a diameter is 90° ($\angle ACD$)
 $\angle BCD = \angle ACB + \angle ACD$
 $= 29 + 90$

[1 mark]**Answer 6**

$3451 \times 0.88^3 = 2352 \text{ Knuts}$

[3 marks]

Answer 7

$$\begin{aligned}
 |AC| &= \sqrt{4^2 + 5^2} \\
 &= \sqrt{41} \\
 \angle VAC &= \arctan\left(\frac{8}{\frac{1}{2}\sqrt{41}}\right) \\
 &= 68.2^\circ
 \end{aligned}$$

[4 marks]**Answer 8**

$$\begin{aligned}
 x &= 4 \times 5^{28} & y &= 8 \times 5^{25} \\
 &= 2^2 \times 5^{28} & &= 2^3 \times 5^{25}
 \end{aligned}$$

(i) $hcf \{x, y\} = 2^2 \times 5^{25}$

[2 marks]

(ii)
$$\begin{aligned}
 lcm \{x, y\} &= \frac{xy}{hcf \{x, y\}} \\
 &= \frac{2^2 \times 5^{28} \times 2^3 \times 5^{25}}{2^2 \times 5^{25}} \\
 &= 2^3 \times 5^{28}
 \end{aligned}$$

[2 marks]**Answer 9**

(i)
$$\begin{aligned}
 p(\text{red}, \text{red}) &= \frac{1}{7} \\
 \frac{n}{15} \times \frac{n-1}{14} &= \frac{1}{7} \\
 n(n-1) &= 15 \times 2 \\
 n^2 - n - 30 &= 0 \quad \square
 \end{aligned}$$

[4 marks]

(ii)
$$\begin{aligned}
 (n+5)(n-6) &= 0 \\
 n &= -5 \quad \text{or} \quad n = 6
 \end{aligned}$$

[2 marks]

(iii) As a probability can not be negative, only $n = 6$ is appropriate.

[1 mark]

(iv) 6 beads of the original 15 where red

[1 mark]