Core Mathematics C12(GCE)

Practice Answer 2

Standard A*

Mr.S.V.Swarnaraja

(*Team Leader, Marking Examiner & Author*)

www.swanash.com

Critical thinking is the key to solve real world problems. Children must be taught how to think, not what to think. A great teacher will be creating students to do new things through critical thinking, Not simply repeating what other generations have done before. We do not need another Albert Einstein or Isaac Newton.... we need a person better than them.

Mr.S.V. Swarnaraja

Answer:

Method 1

Observe that $16 + 2\sqrt{55}$

$$= 5 + 2\sqrt{5} \times \sqrt{11} + 11$$

$$= \left(\sqrt{5}\right)^2 + 2\sqrt{5} \times \sqrt{11} + \left(\sqrt{11}\right)^2$$

$$= \left(\sqrt{5} + \sqrt{11}\right)^2$$

Therefore, $\sqrt{16 + 2\sqrt{55}} = \sqrt{\left(\sqrt{5} + \sqrt{11}\right)^2} = \sqrt{5} + \sqrt{11},$

Hence, $a = 5$ and $b = 11$ $(a < b)$

Answer:

Method 2

$16 + 2\sqrt{55} = \left(\sqrt{a} + \sqrt{b}\right)^2$ (square both sides)

$16 + 2\sqrt{55} = a + 2\sqrt{ab} + b$

So,

$a + b = 16$

$a \times b = 55$

Only possible combinations either $55 = 1 \times 55$ or $55 = 5 \times 11$ (a and b are positive integers)

but, $5 + 11 = 16$

Therefore $\boxed{a = 5 \text{ and } b = 11}$ $(a < b)$

Golden Rules

- $\sqrt{a} = a^{\frac{1}{2}}$
- $\sqrt{ab} = \sqrt{a} \times \sqrt{b}$
- $\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$
- $\sqrt{a} \times \sqrt{a} = a$
- $\sqrt{a} + \sqrt{a} = 2\sqrt{a}$
- $a\sqrt{b} = \sqrt{a^2 b}$
- $a\sqrt{b} \times c\sqrt{d} = ac\sqrt{bd}$
- $a\sqrt{x} \pm b\sqrt{x} = (a \pm b)\sqrt{x}$

Traditonal or Online classes

Mr.S.V.Swarnaraja

(Team Leader, Marking Examiner & Author)

Mobile: +94 777 304755

email: swa@swanash.com

www.swanash.com