

$$1. c^2 = a^2 + b^2$$

$$= 16^2 + 63^2$$

$$= 4225$$

$$c = 65$$

$$2. a^2 = c^2 - b^2$$

$$= 2.9^2 - 2.1^2$$

$$= 4$$

$$a = 2$$

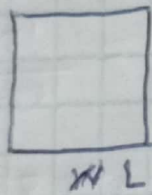
3.

$$\text{height} = 10^2 - 3^2$$

$$= 100 - 9 = 91$$

$$= 9.54 \text{ ft}$$

4



$$A = 112$$

$$112 = L^2$$

$$L = \sqrt{112}$$

$$= 4\sqrt{7} \text{ ft}$$

$$5. \sqrt{45n^5}$$

$$= \sqrt{9 \times 5 \times n^4 \times n}$$

$$= 3n^2\sqrt{5n}$$

$$6. \sqrt{75} + \sqrt{3}$$

$$= \sqrt{25 \times 3} + \sqrt{3}$$

$$= 5\sqrt{3} + \sqrt{3}$$

$$= 6\sqrt{3}$$

$$7. \sqrt{7} (\sqrt{14} + \sqrt{3})$$

$$= \sqrt{98} + \sqrt{21}$$

$$= 7\sqrt{2} + \sqrt{21}$$

$$8. \frac{3x-6}{x-2} = \frac{3(x-2)}{x-2} = 3$$

Excluded value

$$x \neq 2$$

$$9. \frac{x-2}{x^2+3x-10}$$

$$= \frac{x-2}{(x+5)(x-2)}$$

$$= \frac{1}{x+5}$$

Excluded values
 $x \neq -5, 2$

$$10. \frac{5x+10}{x+2} \cdot \frac{2x}{4x-10}$$

$$= \frac{5(x+2)}{x+2} \cdot \frac{2x}{2(2x-5)}$$

$$= \frac{5x}{2x-5}$$

$$11. \frac{3n^2-n}{n^2-1} \div \frac{n^2}{n+1}$$

$$= \frac{3n(3n-1)}{(n-1)(n+1)} \cdot \frac{n+1}{n^2}$$

$$= \frac{3n^2-n}{(n-1)n^2}$$

$$= \frac{3n^2-n}{n^3-n^2} = \frac{n(3n-1)}{n(n^2-n)}$$

$$= \frac{3n-1}{n^2-n}$$

$$12. A = LW$$

$$L = \frac{A}{W} = \frac{7x^3 - 42x^2}{7x^2}$$

$$= \frac{7x^2(x-6)}{7x^2}$$

$$= x-6$$

13. It is biased since the questionnaire is labelled boring in contrast with exciting

14. It is biased since people from health club will prefer healthy drinks.

$$15. \begin{array}{l} 55+62+61+54+68 \\ + 72+59+61+70 \end{array}$$

$$= \frac{562}{9} \quad \text{Range} = 72-54$$

$$= 62.444 \quad = 18$$

$$16. \text{Minimum} = 54$$

$$\text{First quartile} = \frac{55+59}{2}$$

$$= 57$$

$$\text{Median} = 61$$

$$\text{Third quartile} = \frac{68+70}{2}$$

$$\text{Maximum} = 72$$

$$17. \text{IQR class A} = 94 - 74$$

$$= 20$$

$$\text{IQR class B} = 83 - 71$$

$$= 12$$

It is clear that the spread for class A is over 50% higher than the spread of scores for class B.

$$18. {}^9P_3$$

$$= \frac{9!}{(9-3)!} = \frac{9!}{6!}$$

$$= \frac{9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1}{6 \times 5 \times 4 \times 3 \times 2 \times 1}$$

$$= 504$$

$$19. {}^{10}C_4$$

$$= \frac{10!}{4! (10-4)!}$$

$$= \frac{10!}{4! 6!}$$

$$= 210$$

$$20. {}^{15}C_4$$

$$= \frac{15!}{4! (15-4)!}$$

$$= \frac{15!}{4! 11!}$$

$$= 1365$$