**ALPHA UNIVERSITY BORAME**

**DIPLOMA PROGRAM**

**FACAULTY OF**

**Assignment mathematics Method**

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1. **Simplify the ratio 12:16**  
   Divide both terms by 4:  
   **= 3:4**
2. **Divide $120 in the ratio 2:3**  
   Total parts = 2 + 3 = 5  
   One part = $120 ÷ 5 = $24  
   **Shares: $48 and $72**
3. **Ratio of cats to dogs is 4:7; if there are 28 dogs, how many cats?**  
   7 parts = 28 ⇒ 1 part = 4  
   Cats = 4 × 4 = **16 cats**
4. **$240 for 8 hours ⇒ rate per hour**  
   240 ÷ 8 = **$30/hour**
5. **Are 6:9 and 8:12 proportional?**  
   6/9 = 2/3; 8/12 = 2/3  
   **Yes, they are proportional**
6. **3 shirts = $45 ⇒ 5 shirts?**  
   One shirt = $15  
   5 shirts = 5 × $15 = **$75**
7. **5 pens = $10 ⇒ 12 pens?**  
   One pen = $2  
   12 pens = 12 × $2 = **$24**
8. **18 boys, 12 girls ⇒ ratio of boys to total students**  
   Total = 30; Ratio = 18:30 = **3:5**
9. **Find 25% of 480**  
   25/100 × 480 = **120**
10. **Jacket sold for $150 after 20% discount ⇒ original price?**  
    Let original = x:  
    x − 0.2x = 150 ⇒ 0.8x = 150 ⇒ x = 150 ÷ 0.8 = **$187.50**
11. **5% commission on $2,000**  
    0.05 × 2000 = **$100**
12. **60% of a number = 180 ⇒ original number?**  
    0.6x = 180 ⇒ x = 180 ÷ 0.6 = **300**
13. **Simple Interest on $1,200 at 5% for 3 years**  
    SI = PRT/100 = (1200×5×3)/100 = **$180**
14. **Compound Interest on $2,000 at 10% for 3 years (compounded annually)**  
    A = P(1 + r/100)^t = 2000(1.1)^3 ≈ 2000 × 1.331 = **$2,662**
15. **Loan $2,000 for 2 years at 6% p.a. ⇒ total repayment**  
    SI = (2000×6×2)/100 = $240  
    Total = 2000 + 240 = **$2,240**