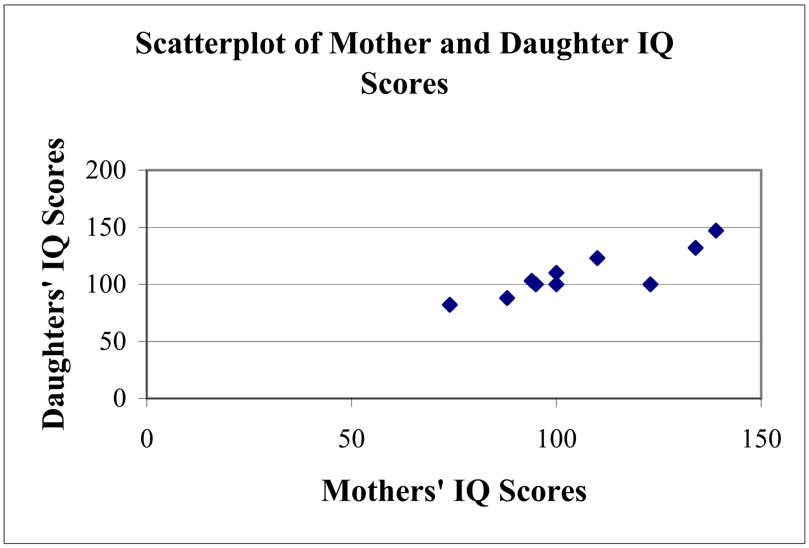
<u>**Practice Problems Solutions**</u>

1. $H_o = 0$
2. $H_1 \neq 0$
3.



4. $$r = \frac{(n \cdot \sum XY) - (\sum X \cdot \sum Y)}{\sqrt{[(n \cdot \sum X^2) - (\sum X)^2] \cdot [(n \cdot \sum Y^2) - (\sum Y)^2]}}$$

$$r = \frac{(10 \cdot 117,945) - (1057 \cdot 1085)}{\sqrt{[(10 \cdot 115,587) - 1057^2] \cdot [(10 \cdot 121,339) - 1085^2]}}$$

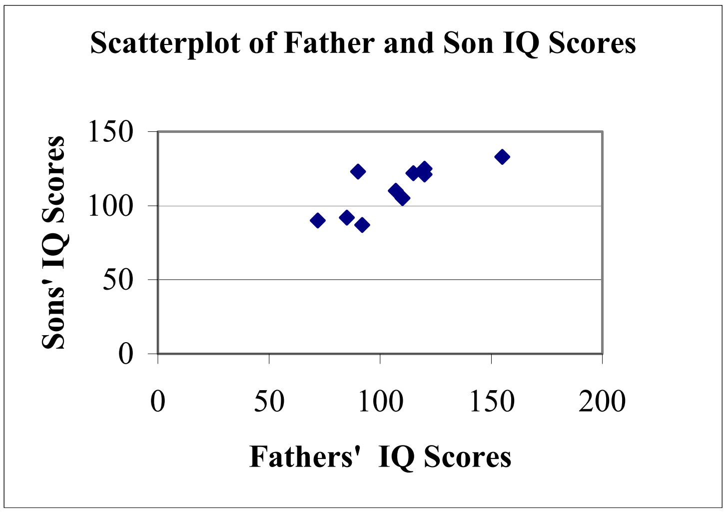
$$r = \frac{(1,179,450) - (1,146,845)}{\sqrt{(1,155,870 - 1.117,249) \cdot (1,213,390 - 1,177,225)]}}$$

$$r = \frac{32,605}{\sqrt{38,621 \cdot 36,165}} = \frac{32,605}{37,372.83} = .872$$

5. df = n – 1 = 9
6. Critical value = .602
7. r^2 = .769
8. Reject the null hypothesis. The data reveals a strong positive relationship between

the IQ scores of mothers and their daughters. The coefficient of determination indicates that .769 of the variability in daughters' IQ score can be explained by the variability in mothers' IQ score.

9. $H_o = 0$
10. $H_1 \neq 0$
11.



12. $$r = \frac{(n \cdot \sum XY) - (\sum X \cdot \sum Y)}{\sqrt{[(n \cdot \sum X^2) - (\sum X)^2] \cdot [(n \cdot \sum Y^2) - (\sum Y)^2]}}$$

$$r = \frac{(10 \cdot 120{,}859) - (1{,}066 \cdot 1{,}108)}{\sqrt{(10 \cdot 1{,}185{,}720) - 1{,}066^2) \cdot (1{,}252{,}260 - 1{,}108^2)}}$$

$$r = \frac{1{,}208{,}590 - 1{,}181{,}128}{\sqrt{(1{,}185{,}720 - 1{,}136{,}356) \cdot (1{,}252{,}260 - 1{,}227{,}664)}}$$

$$r = \frac{27{,}462}{\sqrt{49{,}364 \cdot 24{,}596}} = \frac{27{,}462}{34{,}844.755} = .788$$

13. df = n – 1 = 9
14. Critical value = .602
15. r^2 = .621

16. Reject the null hypothesis. The data reveals a strong positive relationship between the IQ scores of fathers and their sons. The coefficient of determination indicates that .621 of the variability in sons' IQ score can be explained by the variability in fathers' IQ score.