**Use this table for the three following problems:**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Feet(X)** | **Hours(Y)** |  |  |  |  |  |  |  |  |
| 545 | 24.00 | -80.556 | -4.96 | 399.4212963 | 6489.197531 | 24.9 | 16.2751269 | 24.5851 | 0.85394 |
| 400 | 13.50 | -225.56 | -15.46 | 3486.712963 | 50875.30864 | 17.7 | 127.596995 | 238.96 | 17.326 |
| 562 | 26.25 | -63.556 | -2.71 | 172.1296296 | 4039.308642 | 25.8 | 10.1307227 | 7.33507 | 0.22519 |
| 540 | 25.00 | -85.556 | -3.96 | 338.6574074 | 7319.753086 | 24.7 | 18.3581883 | 15.6684 | 0.10648 |
| 220 | 9.00 | -405.56 | -19.96 | 8094.212963 | 164475.3086 | 8.65 | 412.509636 | 398.335 | 0.1239 |
| 344 | 20.00 | -281.56 | -8.96 | 2522.268519 | 79273.53086 | 14.9 | 198.820696 | 80.2517 | 26.4406 |
| 569 | 22.00 | -56.556 | -6.96 | 393.5324074 | 3198.530864 | 26.1 | 8.02202357 | 48.4184 | 17.024 |
| 340 | 11.25 | -285.56 | -17.71 | 5056.712963 | 81541.97531 | 14.7 | 204.510032 | 313.585 | 11.612 |
| 900 | 50.00 | 274.444 | 21.04 | 5774.768519 | 75319.75309 | 42.7 | 188.904488 | 442.752 | 53.2522 |
| 285 | 12.00 | -340.56 | -16.96 | 5775.25463 | 115978.0864 | 11.9 | 290.876963 | 287.585 | 0.00937 |
| 865 | 38.75 | 239.444 | 9.79 | 2344.560185 | 57333.64198 | 40.9 | 143.794713 | 95.8767 | 4.83902 |
| 831 | 40.00 | 205.444 | 11.04 | 2268.449074 | 42207.41975 | 39.2 | 105.857636 | 121.918 | 0.56694 |
| 344 | 19.50 | -281.56 | -9.46 | 2663.046296 | 79273.53086 | 14.9 | 198.820696 | 89.4601 | 21.5486 |
| 360 | 18.00 | -265.56 | -10.96 | 2910.046296 | 70519.75309 | 15.7 | 176.865926 | 120.085 | 5.47916 |
| 750 | 28.00 | 124.444 | -0.96 | -119.2592593 | 15486.41975 | 35.2 | 38.8404645 | 0.9184 | 51.7039 |
| 650 | 27.00 | 24.4444 | -1.96 | -47.87037037 | 597.5308642 | 30.2 | 1.49862761 | 3.83507 | 10.1284 |
| 415 | 21.00 | -210.56 | -7.96 | 1675.671296 | 44333.64198 | 18.4 | 111.190273 | 63.3351 | 6.68919 |
| 275 | 15.00 | -350.56 | -13.96 | 4893.171296 | 122889.1975 | 11.4 | 308.210263 | 194.835 | 12.9426 |
| 557 | 25.00 | -68.556 | -3.96 | 271.3657407 | 4699.864198 | 25.5 | 11.7874183 | 15.6684 | 0.27568 |
| 1028 | 45.00 | 402.444 | 16.04 | 6455.87963 | 161961.5309 | 49.1 | 406.204997 | 257.335 | 16.9156 |
| 793 | 29.00 | 167.444 | 0.04 | 6.976851852 | 28037.64198 | 37.3 | 70.3193542 | 0.00174 | 69.6223 |
| 523 | 21.00 | -102.56 | -7.96 | 816.1712963 | 10517.64198 | 23.8 | 26.3786018 | 63.3351 | 7.96551 |
| 564 | 22.00 | -61.556 | -6.96 | 428.3240741 | 3789.08642 | 25.9 | 9.50315688 | 48.4184 | 15.0204 |
| 312 | 16.50 | -313.56 | -12.46 | 3906.37963 | 98317.08642 | 13.3 | 246.582578 | 155.21 | 10.5275 |
| 757 | 37.00 | 131.444 | 8.04 | 1057.032407 | 17277.64198 | 35.5 | 43.3329104 | 64.6684 | 2.12837 |
| 600 | 32.00 | -25.556 | 3.04 | -77.73148148 | 653.0864198 | 27.7 | 1.63796283 | 9.25174 | 18.6753 |
| 796 | 34.00 | 170.444 | 5.04 | 859.3240741 | 29051.30864 | 37.5 | 72.8616645 | 25.4184 | 12.2097 |
| 577 | 25.00 | -48.556 | -3.96 | 192.1990741 | 2357.641975 | 26.5 | 5.9130458 | 15.6684 | 2.33068 |
| 500 | 31.00 | -125.56 | 2.04 | -256.3425926 | 15764.19753 | 22.7 | 39.5371405 | 4.1684 | 69.381 |
| 695 | 24.00 | 69.4444 | -4.96 | -344.3287037 | 4822.530864 | 32.4 | 12.0950705 | 24.5851 | 71.1683 |
| 1054 | 40.00 | 428.444 | 11.04 | 4730.740741 | 183564.642 | 50.4 | 460.38633 | 121.918 | 108.471 |
| 486 | 27.00 | -139.56 | -1.96 | 273.2962963 | 19475.75309 | 22 | 48.8458474 | 3.83507 | 25.3074 |
| 442 | 18.00 | -183.56 | -10.96 | 2011.462963 | 33692.64198 | 19.8 | 84.5022855 | 120.085 | 3.11812 |
| 1249 | 62.50 | 623.444 | 33.54 | 20911.36574 | 388682.9753 | 60.2 | 974.830046 | 1125.04 | 5.37961 |
| 995 | 53.75 | 369.444 | 24.79 | 9159.143519 | 136489.1975 | 47.5 | 342.319523 | 614.627 | 39.5614 |
| 1397 | 79.50 | 771.444 | 50.54 | 38990.08796 | 595126.5309 | 67.6 | 1492.59747 | 2554.46 | 141.789 |
|  |  |  |  | **137992.8333** | **2755432.889** |  | **6910.71887** | **7771.44** | **860.719** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Feet(X)** | **Hours(Y)** | **XY** | **X^2** |
| 1 | 545 | 24 | 13080 | 297025 |
| 2 | 400 | 13.5 | 5400 | 160000 |
| 3 | 562 | 26.25 | 14752.5 | 315844 |
| 4 | 540 | 25 | 13500 | 291600 |
| 5 | 220 | 9 | 1980 | 48400 |
| 6 | 344 | 20 | 6880 | 118336 |
| 7 | 569 | 22 | 12518 | 323761 |
| 8 | 340 | 11.25 | 3825 | 115600 |
| 9 | 900 | 50 | 45000 | 810000 |
| 10 | 285 | 12 | 3420 | 81225 |
| 11 | 865 | 38.75 | 33518.75 | 748225 |
| 12 | 831 | 40 | 33240 | 690561 |
| 13 | 344 | 19.5 | 6708 | 118336 |
| 14 | 360 | 18 | 6480 | 129600 |
| 15 | 750 | 28 | 21000 | 562500 |
| 16 | 650 | 27 | 17550 | 422500 |
| 17 | 415 | 21 | 8715 | 172225 |
| 18 | 275 | 15 | 4125 | 75625 |
| 19 | 557 | 25 | 13925 | 310249 |
| 20 | 1028 | 45 | 46260 | 1056784 |
| 21 | 793 | 29 | 22997 | 628849 |
| 22 | 523 | 21 | 10983 | 273529 |
| 23 | 564 | 22 | 12408 | 318096 |
| 24 | 312 | 16.5 | 5148 | 97344 |
| 25 | 757 | 37 | 28009 | 573049 |
| 26 | 600 | 32 | 19200 | 360000 |
| 27 | 796 | 34 | 27064 | 633616 |
| 28 | 577 | 25 | 14425 | 332929 |
| 29 | 500 | 31 | 15500 | 250000 |
| 30 | 695 | 24 | 16680 | 483025 |
| 31 | 1054 | 40 | 42160 | 1110916 |
| 32 | 486 | 27 | 13122 | 236196 |
| 33 | 442 | 18 | 7956 | 195364 |
| 34 | 1249 | 62.5 | 78062.5 | 1560001 |
| 35 | 995 | 53.75 | 53481.25 | 990025 |
| 36 | 1397 | 79.5 | 111061.5 | 1951609 |
|  | **22520** | **1042.5** | **790134.5** | **16842944** |

**12.6, page: 446**

a.

**b.** 





**c.** For every cubic foot increase in the amount moved, predicted mean labor hours are estimated to increase by 0.05 hours.

**d.**  hours.

**e.** The labor hours are affected by the amount to be moved.

f. Compute the coefficient of correlation.



g. How strong the relationship between X and Y?

There is very strong positive relationship between X and Y.

(**Feet(X), Hours(Y)**).

**12.18, page: 451**

Using the result of problem 12.6,

1. 

88.92% of the variation in labor hours can explained by the variation in cubic feet moved.

1. 

**12.44, page: 465**

Using the result of problem 12.6,

1. **Using t Test for the Slope:**

,  , t crit. = 2.0322,

t stat. = 



t stat. = 16.5223 > t crit. = 2.0322. At the 0.05 level of significance we reject  , we conclude that there is evidence of a linear relationship between the number of cubic feet moved and the labor hours.

1. ,

, (0.04392 0.05624)