**Solution**

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| The best thing to do as a first step is to pull together all of the standard cost information to calculate a standard cost per unit. | |
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| Direct material (16 litres × 2.5 per litre) | 40 |
| Direct labour (6 hours × $5 per hour) | 30 |
| Fixed production overhead ($30 × 120%) | 36 |
|  | ––––– |
| Total | 106 |
|  | ––––– |

Calculating the required figures is now just a series of exercises in logic. These exercises can seem difficult to the novice – but the logic becomes simple and obvious with familiarity.

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| (a) | If actual fixed production overhead was $150,000 and the fixed production overhead expenditure variance was $6,000 adverse, then it follows that the budget fixed overhead was $144,000. From this it follows that the budget must have been 4,000 units (that is, $144,000 budgeted overhead/$36 standard overhead cost per unit). |
| (b) | If the standard material purchase price was $2.50 per litre and the actual purchase price was $2.45, then it follows that the material price variance is $0.05 per litre favourable. We are told that the material price variance was $8,000 favourable, so it follows that 160,000 litres must have been purchased (that is, $8,000 price variance/$0.05 price variance per litre). |
| (c) | If the direct material usage variance was $6,000 adverse and the standard price of materials is $2.50 per litre, then it follows that the number of litres used above the standard allowance is 2,400 ($6000/$2.50 per litre). |
| (d) | If the actual direct labour cost was $121,500 and labour cost variances totalling $900 adverse ($4,500 adverse rate plus $3,600 favourable efficiency) were experienced, then the standard labour cost for the output achieved was $120,600. It follows that the units produced were 4,020 (that is, $120,600 standard labour cost/$30 standard labour cost per unit). |
| (e) | The total hours actually worked is 24,120 standard hours worked (that is, 4,020 units produced at 6 standard hours per unit) minus the 720-hour favourable labour efficiency variance (that is, $3,600 efficiency variance/$5 standard rate per hour). This gives a total of 23,400 actual hours worked. |
| (f) | If the actual labour cost was $121,500 and the actual hours worked was 23,400, then it follows that the actual wage rate per hour was $5.1923. |