MIG

**SAVE THIS FILE AS: U6Review1**

**Unit 6 Review 1** Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Determine if the following decision variables should be evaluated using Linear Programming (LP), Integer Programming (IP) or Binary Programming (BP). Circle your choice for each question.

1. *x1* = days spent replacing windows

**Remember that:**

LP – *means the decision variables can be decimals.*

IP – *means the decision variables can NOT be decimals.*

BP – *means the decision variables will be a 1 or a 0 indicating a yes or a no.*

LP IP BP

*x2*= days spent replacing doors

1. *x1* = Purchase Car A

LP IP BP

*x2*= Purchase Car B

*x3* = Purchase Car C

1. *x1* = number of type A trucks rented

LP IP BP

*x2*= number of type B trucks rented

1. *x1* = Take trip A

LP IP BP

*x2*= Take trip B

1. *x1* = amount of generals

LP IP BP

*x2*= amount of sergeants

*x3* = amount of soldier

1. *x1* = Take Job A

*x2*= Take Job B

LP IP BP

*x3* = Take Job C

*x4* = Take Job D

1. Foster High School assigns students to community service work as a part of their graduation requirements. Recently, the school received a notice about a project from the Community Help organization to pack kits for disaster relief. Five types of kit are needed: Emergency Food Packs, Children’s, Personal Care, Food Support, and Household. Two students can be assigned to pack each of the 5 different types of kits. As a time saving method, the Community Help organization calculates and records the packing rate for each volunteer, in order to assign the most efficient volunteer to the right task. The packing rate is the number of kits packed per hour.

|  |  |
| --- | --- |
| **kits packed per hour** | Kits |
| **Emergency Food Packs** | **Children’s**  | **Personal Care** | **Food Support** | **Household** |
| Students | Abdullah | 3 | 6 | 6 | 6 | 3 |
| Susan | 12 | 18 | 7 | 9 | 9 |
| Jeff | 14 | 12 | 6 | 10 | 3 |
| Briana | 5 | 13 | 6 | 13 | 4 |
| Naomi | 6 | 14 | 9 | 15 | 9 |
| Brenden | 14 | 9 | 2 | 12 | 9 |
| Carlos | 12 | 17 | 11 | 5 | 1 |
| LaQuita | 4 | 16 | 2 | 14 | 6 |
| Matthew | 4 | 14 | 9 | 6 | 3 |
| Erika | 8 | 17 | 4 | 14 | 3 |

1. Which student should be assigned to each task in order to pack the kits in the least amount of time?

***Hint: this means you want the people that have the largest pack rate.* CIRCLE THE PACK RATE FOR THOSE ASSIGNED AND INDICATE THE MAXIMUM PACK RATE.**

1. The community organization has decided they only need one student per kit. What would this change the assignments to? And who would not be assigned to work? **PLACE A STAR NEXT TO THE PACK RATE FOR THOSE ASSIGNED AND INDICATE THE MAXIMUM PACK RATE.**