First Name:_____   Last Name:_____

L03 – FQ – Calculating Net Forces

Use the following information to answer Q1-Q3:

Two young children are in a wagon being pulled to the left by a young boy with a force of 300N at an angle of inclination of 20° above the horizontal and pushed by a girl with a horizontal force of 320N to the left. The wagon and contents experience a combined gravitational force of 900N.

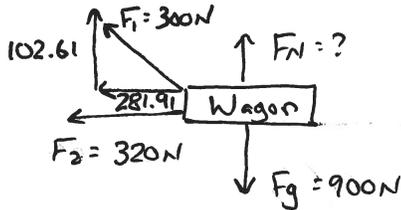**Q1:** Which image best represents the free-body diagram of the wagon?

A) F_N F_1 Wagon F_2 F_g

B) F_N F_1 Wagon F_2 F_g

C) F_N F_1 Wagon F_2 F_g

(D) F_N F_1 Wagon F_2 F_g
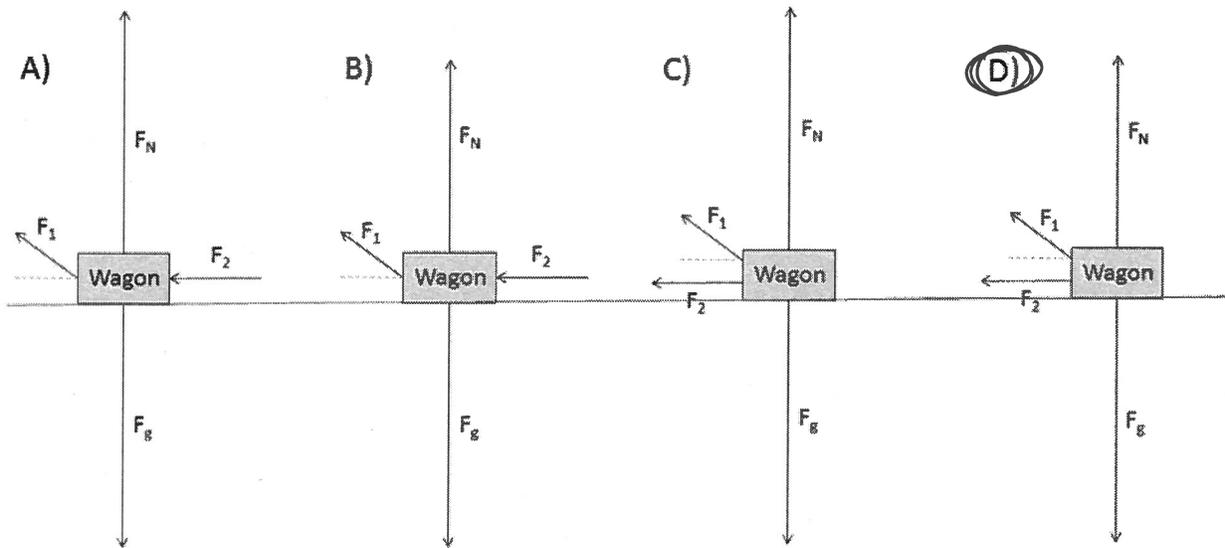
$F_N < F_g$

Q2: The net force in the x-component is *a.bc* x 10^d N, where *a, b, c,* and *d* are ___, ___, ___, and ___.

*(Record your **four-digit** answer in the Numerical Response boxes below)*

6	0	2	2

<u>x-comp</u>

$F_{net_x} = F_{1x} + F_{2x}$

$= 320\,N\,[Left] + 281.91\,N\,[Left]$

$= 601.91\,N$

$= 6.0191 \times 10^2\,N$

$\approx 6.02 \times 10^2\,N$

$F_1 = 300N$

102.61

281.91 | Wagon |

$F_2 = 320N$

$F_N = ?$

$F_g = 900N$

Q3: The net force in the y-component is

(a.) 0.0 N
  b. 102.6 N
  c. 281.9 N
  d. 797.4 N

Object isn't accelerating up or down.

Q4: The Normal Force exerted on the wagon by the ground is *a.bc* x 10^d N, where *a, b, c,* and *d* are ___, ___, ___, and ___.

*(Record your **four-digit** answer in the Numerical Response boxes below)*

7	9	7	2

<u>y-comp</u>

$F_{net_y} = F_g + F_N + F_{1y}$

$0 = (-900) + F_N + (+102.61)$

$0 = -797.39 + F_N$

$F_N = 797.39N$

$= 7.9739 \times 10^2\,N$

$\approx 7.97 \times 10^2\,N$

MARKING:

Beginning	0 – 1
Progressing	2
Competent	3
Exemplary	4