Applying Standard Form to Linear Functions Task Name: Key

Use the scenario below to answer questions 1-6.

Students rented buses and vans to go attend a Science and Math Day at Adventureland. There were 8 vans and 12 buses for the 360 students.

1. Define variables that represent the unknown quantities in the problem. Then write an equation that can be used to find the number of students in each van and bus if all 360 students attend.

$8x + 12y = 360$

x: # of students on a van

y: # of students on a bus

2. Using the equation, calculate the x and y intercepts of the equations. Show all your work.

x-int ($y=0$)

$8x + 12(0) = 360$

$8x = 360$

$x = 45$

$(45, 0)$

y-int ($x=0$)

$8(0) + 12y = 360$

$12y = 360$

$y = 30$

$(0, 30)$

3. What do the intercepts means in terms of the problem situation? Use compete sentences in your answer.

x-int: If 0 students ride the bus, then there has to be 45 students per van to fit everyone.

y-int: If 0 students ride in vans, then there has to 30 students per bus to fit everyone.

4. If 12 students rode in each van, how many students rode in each bus? ($x=12$)

$8(12) + 12y = 360$

$96 + 12y = 360$

$12y = 264$

$y = 22$

If 12 students ride in each van, 22 students have to ride in each bus.

5. If 26 students rode in each bus, how many students rode in each van? ($y=26$)

$8x + 12(26) = 360$

$8x + 312 = 360$

$8x = 48$

$x = 6$

If 26 students ride in each bus, then 6 students must ride in each van.

6. Write the equation from Question 1 in slope intercept form.

you need your slope & y-int!

$8x + 12y = 360$

$-8x \quad -8x$

$\frac{12y}{12} = -\frac{8x}{12} + \frac{360}{12}$

$y = -\frac{2}{3}x + 30$