

4.5

1. Elvira's cafeteria has those cute little cartons of milk that are typical of school lunch. The milk supplier charges \$0.35 per carton of milk, in addition to a delivery charge of \$75. What is the maximum number of milk cartons that Elvira can buy if she has budgeted \$500 for milk?

$$\begin{array}{r} \text{total cost} \\ \overbrace{0.35C + 75} \leq 500 \\ \quad \quad \quad \cancel{-75} \quad \quad \quad -75 \end{array}$$

$$\frac{0.35C}{0.35} \leq \frac{425}{0.35}$$

$$C \leq 1214. \text{ cartons of milk}$$

2. Students love to put ranch dressing on everything, so Elvira needs to keep plenty in stock. The students eat about 2.25 gallons of ranch each day! Elvira started the school year with 130 gallons of ranch dressing. She needs to have at least 20 gallons left when she reorders to have enough in stock until the new order comes. For how many days will her ranch dressing supply last before she needs to reorder?

$$-2.25d + 130 \geq 20$$

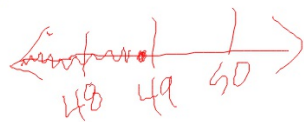
$$\underline{-130} \quad \underline{-130} \quad \underline{-110}$$

$$\underline{-2.25d} \geq \underline{-110}$$

$$\underline{-2.25} \geq \underline{2.25}$$

$$d \geq -48.\bar{8}$$

$$d \leq +48.\bar{8}$$



The ranch will last
48 8 days or less

interval
notation

$$[0, 48.\bar{8}]$$

3. The prices on many of the cafeteria foods change during the year. Elvira finds that she has ordered veggie burgers four times and paid \$78, \$72, \$87, and \$90 on the orders. To stay within her budget, Elvira needs to be sure that the average order of veggie burgers is not more than \$82. How much can she spend on the fifth order to keep the average order within her budget?

$$5 \cdot \frac{78+72+87+90+n}{5} \leq 82.5$$

Her 5th order would have to be \$83 or less.

$$\begin{array}{r} 78+72+87+90+n \leq 410 \\ -327 \\ \hline n \leq 83 \end{array}$$

$n \leq 83$

$[0, 83]$

82 83 84

4. Elvira can purchase ready-made pizzas for \$14.50 each. If she makes them in the cafeteria, she can spend \$44.20 on ingredients and \$6.25 per pizza on labor. For how many pizzas is it cheaper for the cafeteria to make the pizzas themselves rather than buy them ready-made?

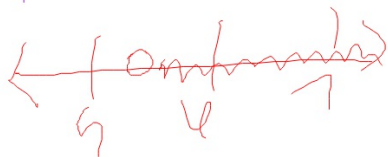
$$14.50p > \$44.20 + 6.25p$$

$$-6.25p$$

$$8.25p > \underline{44.20}$$

$$\underline{8.25} \quad 8.25$$

$$p > 5.35$$



If you make more than 5.35 pizzas then home making them is cheaper

$$(5.35, \infty)$$

5. Elvira is comparing prices between two different suppliers of fresh lettuce. Val's Veggies charges \$250 for delivery plus \$1.50 per bag of lettuce. Sally's Salads charges \$100 for delivery plus \$4.00 per bag of lettuce. How many bags of lettuce must be purchased for Val's Veggies to be the cheaper option?

She has order more than 60 bags for Val's to be cheaper

$$\begin{array}{rcl}
 \text{Val's Veggies} & & \text{Sally's Salad} \\
 1.50b + 250 & < & 4b + 100 \\
 - 1.5b & & - 1.5b \\
 \hline
 250 & < & 2.5b + 100 \\
 - 100 & & - 100 \\
 \hline
 150 & < & 2.5b \\
 \frac{150}{2.5} & < & \frac{2.5b}{2.5} \\
 60 & < & b \implies b > 60
 \end{array}$$

6. Each student that buys school lunch pays \$2.75. The cafeteria typically brings in between \$1168.75 and \$1438.25. How many students does the cafeteria usually serve?

