Name Key Hour

12.7 Word Problems

The 83 members of the Newman Middle School Band are trying to raise at least $5,000 to buy new percussion instruments. They have already raised $850. How much should each student still raise, on average, to meet the goal?

Let d represent the average amount each student should still raise.

Inequality $83x + 850 \geq 5{,}000$

$-850 \quad -850$

$\frac{83x}{83} \geq \frac{4150}{83}$

$x \geq 50$

Solution set $x \geq \$50$

at least $50

Sun-Li has $30 to spend at the carnival. Admission is $5, and each ride costs $2. What is the greatest number of rides she can ride?

Let r represent the number of rides Sun-Li can ride.

Inequality $5 + 2r \leq 30$

$-5 \quad -5$

$\frac{2r}{2} \leq \frac{25}{2}$

$r \leq 12.5$

Solution set $r \leq 12.5$

at most 12 rides

Three students collected more than $93 washing cars. They used $15 to reimburse their parents for cleaning supplies. Then they divided the remaining money equally. How much did each student earn?

variable x = $ ea. earned

Inequality $\frac{x-15}{3} > 93$

OR

$x - 15 > 279$

$x > 294$

Solution set $x > 294$

more than $294

Margie has $100. She wants to buy a book for $20 and some CDs for $15 each. At most, how many CDs can Margie buy?

variable x = # of CDs

Inequality $20 + 15x \leq 100$

$-20 \quad -20$

$\frac{15x}{15} \leq \frac{80}{15}$

$x \leq 5.\overline{3}$

Solution set $x \leq 5.\overline{3}$

at most 5 CDs

Manny needs to buy 5 work shirts that are each the same price. After he uses a $20 gift certificate, he can spend no more than $50. What is the maximum amount that each shirt can cost?

variable x = $ of ea. shirt

Inequality $5x - 20 \leq 50$

$+20 \quad +20$

$\frac{5x}{5} \leq \frac{70}{5}$

$x \leq 14$

Solution set $x \leq 14$

at most $14

Mr. Monroe keeps a bag of small prizes to distribute to his students. He likes to keep at least twice as many prizes in the bag as he has students. The bag currently has 79 prizes in it. Mr. Monroe has 117 students. How many more prizes does he need to buy?

variable x = # of prizes needed

Inequality $x + 79 \geq 117(2)$

$-79 \geq -79$

$x \geq 155$

Solution set $x \geq 155$

at least 155 prizes

Rico has $5.00. Bagels cost $0.65 each, and a small container of cream cheese costs $1.00. What is the greatest number of bagels Rico can buy if he also buys one small container of cream cheese?

variable x = # of bagels

Inequality $.65x + 1.00 \leq 5.00$

$-1.00 \quad -1.00$

$\frac{.65x}{.65} \leq \frac{4.00}{.65}$

$x \leq 6.2$

Solution set $x \leq 6.2$

at most 6 bagels

The 35 members of a drill team are trying to raise at least $1,200 to cover travel costs to a training camp. They have already raised $500. How much should each member still raise, on average, to meet the goal?

variable x = $ ea. member

Inequality $35x + 500 \geq 1{,}200$

$-500 \quad -500$

$\frac{35x}{35} \geq \frac{700}{35}$

$x \geq 20$

Solution set $x \geq 20$

at least $20 ea.

Fifty students in the seventh grade are trying to raise at least $2,000 for sports supplies. They have already raised $750. How much should each student raise, on average, in order to meet the goal?

variable x = $ ea. student

Inequality $50x + 750 \geq 2{,}000$

$-750 \quad -750$

$\frac{50x}{50} \geq \frac{1{,}250}{50}$

$x \geq 25$

Solution set $x \geq 25$

at least $25

A concert is being held in a gymnasium that can hold no more than 450 people. The bleachers seat 60 people. There will also be 26 rows of chairs set up. At most, how many people can sit in each row?

variable x = # people in a row

Inequality $26x + 60 \leq 450$

$-60 \quad -60$

$26x \leq 390$

$\frac{26x}{26} \leq \frac{390}{26}$

$x \leq 15$

Solution set $x \leq 15$

at most 15 people

The 23 members of the Westview Journalism Club are trying to raise at least \$2,100 to buy new publishing design software. The members have already raised \$1,180. How much should each student still raise, on average, to meet the goal?

variable x = \$ for each student

Inequality $23x + 1{,}180 \geq 2{,}100$

$-1180 \quad -1180$

$23x \geq 920$

$\frac{23x}{23} \geq \frac{920}{23}$

Solution set $x \geq 40$

at least \$40

Business Darcy earns a salary of \$1,400 per month, plus a commission of 4% of her sales. She wants to earn a total of at least \$1,600 this month. What is the least amount of sales she needs?

variable x = amt of sales

Inequality $.04x + 1{,}400 \geq 1{,}600$

$-1400 \quad -1400$

$.04x \geq 200$

$\frac{.04x}{.04} \geq \frac{200}{.04}$

$x \geq 5{,}000$

Solution set $x \geq 5{,}000$

at least \$5,000