

Notes: Inequalities in One-Variable and Their Application

Name: _____

Solve and graph.

1) $-5(1+4a) > -5$
 $-5 + 20a > -5$
 $20a > 0$
 $a > 0$

2) $-1 \leq 2n + 4 + 5$
 $-1 \leq 2n + 9$
 $0 \leq 2n$
 $0 \leq n$
 $n \geq 0$

3) $-2(w+1) + 4 < 10$
 $-2w - 2 + 4 < 10$
 $-2w + 2 < 10$
 $-2w < 8$
 $w > -4$

4) $5x + (x+2) \geq -5(1+x) + 3$
 $5x + x + 2 \geq -5 - 5x + 3$
 $4x + 2 \geq -2 - 5x$
 $4x + 5x \geq -2 - 2$
 $9x \geq -4$
 $x \geq 0$

or
 $0 \geq -9x$
 $0 \leq x$

For each problem, define your variable, write an inequality for the situation and solve.

5) A car agency rents cars for \$26.20 per day plus \$0.22 per mile driven. If your travel budget is \$200, what is the maximum number of miles you can drive during a one day rental?

Variable: m: # of miles
 Inequality: $200 \geq 26.20 + .22m$
 $173.8 \geq .22m$
 $790 \geq m$

Solution: 790 mi
 or less

6) Suppose Summer is running a concession stand when a person gives her \$30 and asks for six sodas and as many hotdogs as the remaining money will buy. If sodas are \$1.50 and hotdogs are \$2, what is the maximum number of hotdogs the person can buy?

Variable: h: # of hotdogs
 Inequality: $30 \geq 1.5(6) + 2h$
 $30 \geq 9 + 2h$
 $21 \geq 2h$

Solution: 10 hotdogs $10.5 \geq h$
 or fewer.

7) Jude has a \$30 online gift voucher. He plans to buy as many books as he can. The cost of each book is \$4.00. There is also a single shipping charge of \$2. How many books can he afford without spending more than his gift voucher amount?

Variable: b: # of books
 Inequality: $30 \geq 4b + 2$
 $28 \geq 4b$
 $7 \geq b$

Solution: 7 books
 or less

What Did the Beaver Say to the Tree?

Solve each inequality or problem, then find your solution in the answer column.
Write the letter of the correct answer in each box containing the exercise number.

1 $-7x + 4 \geq 18$

2 $-10 + \frac{x}{3} > -12$

3 $5 - 16x < 69$

4 $-\frac{1}{2}x - 98 \leq -99$

5 $15x - 2 < 58$

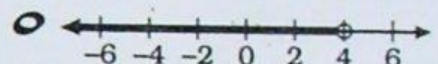
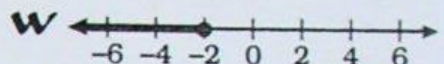
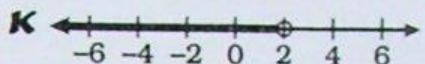
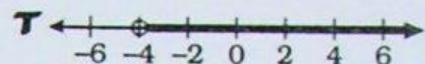
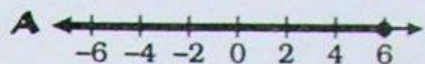
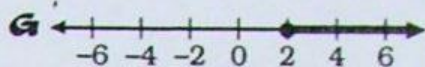
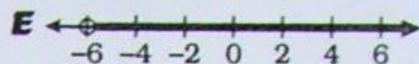
6 $4 - \frac{5}{3}x \geq -6$

- 7 Canyu Canoe Co. rents canoes for \$8 plus \$3 per hour or any part of an hour. For how many hours can you rent a canoe if you want to spend no more than \$25?

- 8 Klogg weighs 170 lb. He is loading a freight elevator with identical 69-pound boxes. The elevator can carry no more than 2000 lb. If Klogg rides up with the boxes, how many boxes can be loaded on the elevator?

- 9 Karina needs a total score of at least 627 on three games of bowling to break the league record. Suppose she bowls 222 on her first game and 194 on her second game. What score does she need on her third game to break the record?
- 10 Suppose you have a mailing that you want to weigh no more than 3 oz (to reduce costs). The manila envelope you are using weighs 0.52 oz, and each sheet of paper weighs 0.18 oz. How many sheets can you put in the envelope?
- 11 For lunch Tonka has a hamburger and potato chips. The hamburger has 380 calories and each chip has 12 calories. How many chips can Tonka eat if he wants the total calories to be less than 600?
- 12 Suppose you are a salesperson for Glitz 'n Glitter. Each month you earn \$450 plus one eighth of your sales. What amount must you sell this month to earn more than \$2000?
- 13 The Mega Middle School Carnival charges \$4 for admission plus \$0.75 for each ride ticket. How many ride tickets can you buy if you want to spend at most \$20?

Answers for Exercises 1-6



Answers for 7-13

L 215 or more

I 13 or less

F $> \$13,200$

U 5 or less

N 21 or less

Y 211 or more

D 7 or less

C 18 or less

S 26 or less

M 16 or less

B $> \$12,400$

10	3	8	12	2	2	13	13	10	11	2	4	13	6	1	10	13	4	9	5	7
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