



# TEST YOUR SKILLS

- 1** Write the sentence in bold type as an equation. (Let  $x$  represent the unknown number. DO NOT SOLVE.)

**Twenty-five less a number is triple the quotient of six and twice the number.**

(USA Southeast Missouri State University: Math Field Day, 2005)

- 2** The world's largest sheep ranch is located in Australia. There are three times as many sheep as kangaroos on the ranch, for a total of 87,000 animals. How many sheep are there on this ranch?

(CAN John Abbott College, Final Exam, 2000)

[65 250]

- 3 TEST** If  $a < b$  and  $c < d$ , which of the following statements is ALWAYS true?

**A**  $ac < bd$       **D**  $a - b < d - c$

**B**  $\frac{a}{c} < \frac{b}{d}$       **E**  $a + b > c + d$

**C**  $a + b < c + d$

(USA Tennessee Mathematics Teachers Association: 39th Annual Mathematics Contest, 1995)

- 4** Solve the given inequalities, graph the solution set on a number line, and write the solution in interval notation.

a)  $2x - 3 \geq 9 + 3x$

b)  $2x + 5 > 10$  or  $2x + 5 < -10$

c)  $-3 \leq 4x + 1 < 5$

(USA Tacoma Community College, Review for Test, 2002)

[a)]  $-\infty, -12]$ ; b)  $-\infty, -\frac{15}{2} [ \cup ] \frac{5}{2}, +\infty [$ ; c)  $[-1, 1[$

- 5** Solve the simultaneous inequalities:

$$\begin{cases} -4x - 2 \leq -2x + 3 \\ \frac{2}{3}x + 9 \geq x + 6 \end{cases}$$

Graph the solution set on a number line.

$$\left[ -\frac{5}{2} \leq x \leq 9 \right]$$

- 6** A consultant can be paid in two manners.

Plan A: \$ 30 per hour;

Plan B: \$ 400 plus \$ 20 per hour.

Suppose the job takes  $n$  hours. For what values of  $n$  is Plan A better for the consultant than Plan B?

[ $n > 40$ ]

- 7** If twelve is added to twice a number the result is three less than five times the number. Find the number.

(CAN John Abbott College, Final Exam, 2002)

- 8** Find the solution set:  $8 < 2(4 - m)$ .

(USA Southeast Missouri State University: Math Field Day, 2005)

[ $m < 0$ ]

- 9** Find the measure of an angle such that three times the complement of the angle is  $30^\circ$  more than the angle.

(CAN John Abbott College, Final Exam, 2002)

[ $60^\circ$ ]

- 10** The length of each leg of an isosceles triangle is  $x + 1$  and the length of the base is  $3x - 2$ . Determine all possible values of  $x$ . (The triangle should be nondegenerate; i.e. not just a straight line. Note also that  $x$  need not be an integer; your answer should be an inequality.)

(USA Lehigh University: High School Math Contest, 2005)

$$\left[ \frac{2}{3} < x < 4 \right]$$

## GLOSSARY

**to add:** aggiungere, addizionare

**bold type:** carattere neretto

**consultant:** consulente

**to graph:** rappresentare  
graficamente

**inequality:** disequazione

**job:** lavoro

**kangaroo:** canguro

**leg:** lato

**length:** lunghezza

**less:** meno

**number line:** retta numerica

**to pay-paid-paid:** pagare

**plan:** piano, progetto

**plus:** più

**sentence:** frase

**solution set:** insieme  
delle soluzioni

**sheep:** pecora

**to solve:** risolvere

**statement:** enunciato

**straight line:** linea retta

**true:** vero

**twice:** due volte

**unknown:** sconosciuto

**value:** valore