

# Written Exercises

Tell whether a triangle with sides of the given lengths is acute, right, or obtuse.

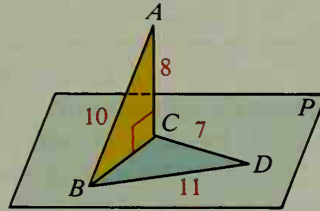
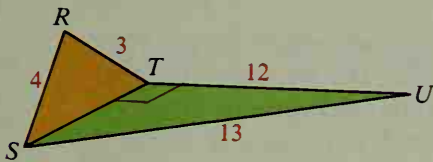
- A**
1. 11, 11, 15
  2. 9, 9, 13
  3. 8,  $8\sqrt{3}$ , 16
  4. 6, 6,  $6\sqrt{2}$
  5. 8, 14, 17
  6. 0.6, 0.8, 1
  7. a. 0.5, 1.2, 1.3
  - b.  $5n$ ,  $12n$ ,  $13n$  where  $n > 0$
  8. a. 33, 44, 55
  - b.  $3n$ ,  $4n$ ,  $5n$  where  $n > 0$

9. Given:  $\angle UTS$  is a rt.  $\angle$ .

Show that  $\triangle RST$  must be a rt.  $\triangle$ .

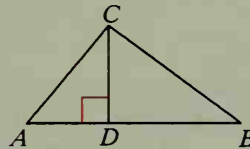
10. Given:  $\overline{AC} \perp$  plane  $P$

Show that  $\triangle BCD$  must be obtuse.



Use the information to decide if  $\triangle ABC$  is acute, right, or obtuse.

- B**
11.  $AC = 13$ ,  $BC = 15$ ,  $CD = 12$
  12.  $AC = 10$ ,  $BC = 17$ ,  $CD = 8$
  13.  $AC = 13$ ,  $BC = \sqrt{34}$ ,  $CD = 3$
  14.  $AD = 2$ ,  $DB = 8$ ,  $CD = 4$



15. The sides of a triangle have lengths  $x$ ,  $x + 4$ , and 20. Specify those values of  $x$  for which the triangle is acute with longest side 20.
16. Sketch  $\square EFGH$  with  $EF = 13$ ,  $EG = 24$ , and  $FH = 10$ . What special kind of parallelogram is  $EFGH$ ? Explain.
17. Sketch  $\square RSTU$ , with diagonals intersecting at  $M$ .  $RS = 9$ ,  $ST = 20$ , and  $RM = 11$ . Which segment is longer,  $\overline{SM}$  or  $\overline{RM}$ ? Explain.
18. If  $x$  and  $y$  are positive numbers with  $x > y$ , show that a triangle with sides of lengths  $2xy$ ,  $x^2 - y^2$ , and  $x^2 + y^2$  is always a right triangle.
19. a. Complete this statement of Theorem 8-5:  
If the square of the longest side of a triangle         $\quad$        .  
b. Prove Theorem 8-5.  
Given:  $\triangle RST$ ;  $l^2 > j^2 + k^2$   
Prove:  $\triangle RST$  is an obtuse triangle.  
(Hint: Start by drawing right  $\triangle UVW$  with legs  $j$  and  $k$ .  
Compare lengths  $l$  and  $n$ .)

