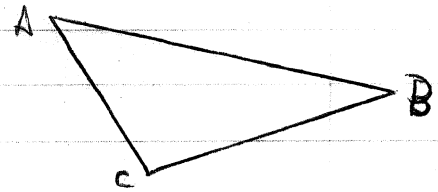
Geometry Ch 5-5 Exer., pg 333 #1-2, 6-12, 16-19, 21-26, 31-32

1. Using diagram, name each angle and its opposite side.



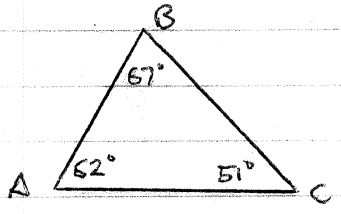
$\angle A$ is opposite $\overline{CB}$,
$\angle B$ is opposite $\overline{AC}$,
$\angle C$ is opposite $\overline{AB}$

2. How can you tell from the angle measures of a triangle which side is longest / shortest?

The longest side is opposite the greatest angle, while the shortest side is opposite the smallest angle.

List the sides and angles in order from smallest to largest.

6.

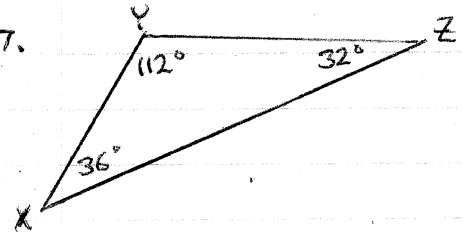


smallest to largest

SIDES: $\overline{AB}$, $\overline{BC}$, $\overline{AC}$

ANGLES: $\angle C$, $\angle A$, $\angle B$

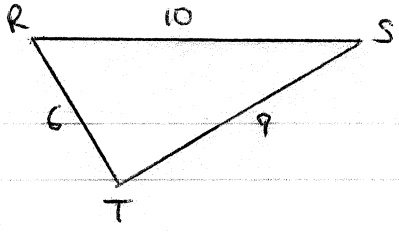
7.



SIDES: $\overline{XY}$, $\overline{YZ}$, $\overline{XZ}$

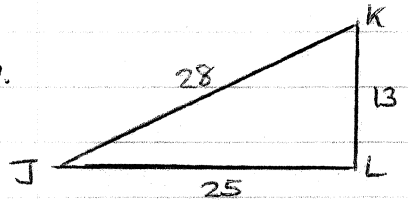
ANGLES: $\angle Z$, $\angle X$, $\angle Y$

Smallest to largest

8. 

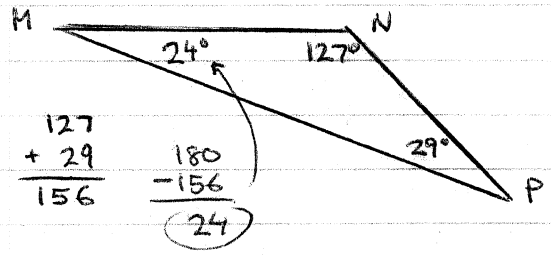
SIDES: $\overline{RT}$, $\overline{TS}$, $\overline{SR}$

ANGLES: $\angle S$, $\angle R$, $\angle T$

9. 

SIDES: $\overline{KL}$, $\overline{JL}$, $\overline{JK}$

ANGLES: $\angle J$, $\angle K$, $\angle L$

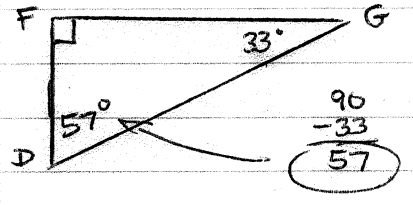
10. 

$127 + 29 = 156$

$180 - 156 = 24$

SIDES: $\overline{NP}$, $\overline{MN}$, $\overline{MP}$

ANGLES: $\angle M$, $\angle P$, $\angle N$

11. 

$90 - 33 = 57$

SIDES: $\overline{DF}$, $\overline{FG}$, $\overline{DG}$

ANGLES: $\angle G$, $\angle D$, $\angle F$

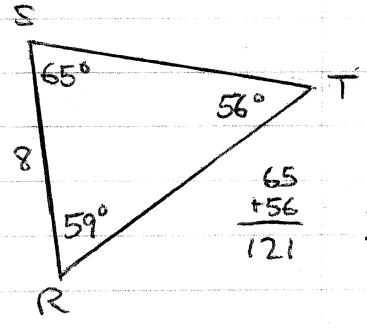
12. In $\triangle RST$, which is a possible length for ST?

A. 7

B. 8

C. 9

D. Cannot be determined



$65 + 56 = 121$

$180 - 121 = 59$

Since $\angle R$ is greater than $\angle T$,
$\overline{ST}$ must be greater than SR, or 8
Thus 9 is a possible length

Is it possible to construct a triangle with given side lengths.

16. 6, 7, 11 — Yes; $6+7 > 11$

17. 3, 6, 9 — No; $3+6=9$ [Must be greater than 9]

18 28, 34, 39 — Yes; $28+34 > 39$

19. 35, 120, 125 — Yes; $35+120 > 125$

Describe the possible lengths to the third side of the triangle given the lengths of the other two sides.

21. 5 in, 12 in — $12-5=7$, $12+5=17$ — $7 < 3^{rd}$ side < 17 inches

22. 3 m, 4m — $4-3=1$, $4+3=7$ — $1\text{ m} < 3^{rd}$ side $< 7\text{ m}$

23. 12 ft, 18 ft — $18-12=6$, $18+12=30$ — $6\text{ ft} < 3^{rd}$ side $< 30\text{ ft}$

24. 10 yds, 23 yds — $23-10=13$, $23+10=33$ — $13\text{ yds} < 3^{rd}$ side $< 33\text{ yds}$

25. 2 ft, 40 inches
24 inches, 40 inches — $40-24=16$, $40+24=64$ — $16\text{ in} < 3^{rd}$ side $< 64\text{ in}$

26. 25 m, 25 m — $25-25=0$, $25+25=50$ — $0\text{ m} < 3^{rd}$ side $< 50\text{m}$

Is it possible to build a triangle using the given side lengths. If so, list the angles from least to greatest.

31. $PQ = \sqrt{58} = 7.62$

$QR = 2\sqrt{13} = 7.21$

$PR = 5\sqrt{2} = 7.07$

Yes, because $7.07 + 7.21 > 7.62$

Smallest Angle: $\angle Q$

Middle Angle: $\angle P$

Greatest Angle: $\angle R$

32. $ST = \sqrt{29} = 5.39$

$TU = 2\sqrt{17} = 8.25$

$SU = 13.9 = 13.9$

No, because $5.39 + 8.25$ is not greater than 13.9