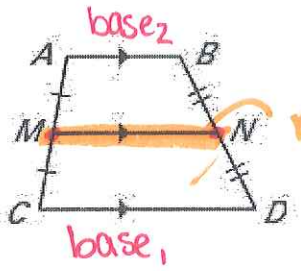
8.5 Supplemental Notes

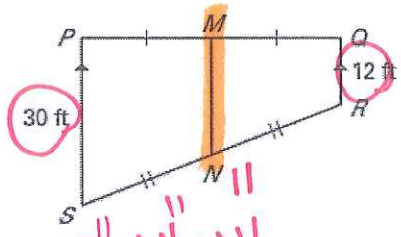
Midsegment Theorem: base, ∥ midsegment ∥ base$_2$ AND



$\text{midsegment} = \frac{1}{2}(\text{base}_1 + \text{base}_2)$

Ex. 1

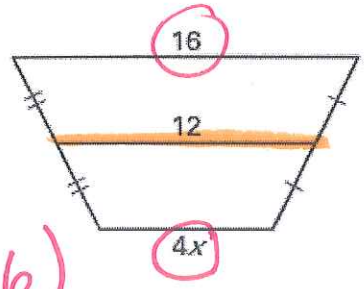
Find the length of MN.



$21 = \frac{1}{2}(42)$ $(30+12)$

Ex. 2

Find the value of x.



$12 = \frac{1}{2}(4x+16)$

$12 = 2x + 8$

$-8 \quad -8$

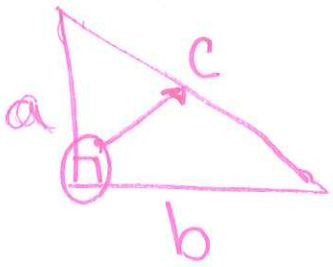
$\frac{4}{2} = \frac{2x}{2}$

$x = 2$

Pythagorean Theorem: $a^2 + b^2 = c^2$

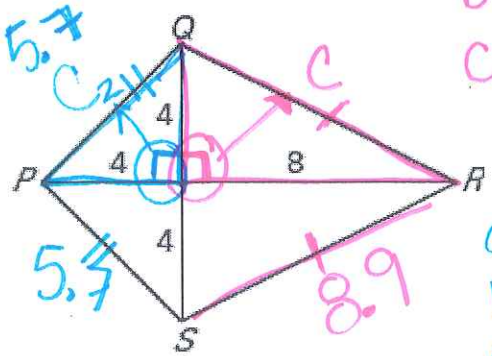
When do we use Pythagorean Theorem?

only for rt. Δs



Ex. 3

Find the side lengths of the kite.



a: 4
b: 8
c: ?

$4^2 + 8^2 = c^2$

$16 + 64 = c^2$

$\sqrt{80} = \sqrt{c^2}$

$c = 8.9$

a: 4
b: 4
c: ?

$4^2 + 4^2 = c_2^2$

$16 + 16 = c_2^2$

$\sqrt{32} = \sqrt{c_2^2}$ $c_2 = 5.65$

Name _____ Date _____

LESSON 8.5

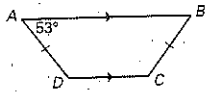
Practice A

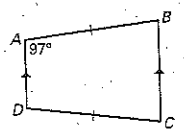
For use with pages 541–549

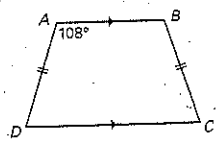
Points *J*, *K*, *L*, and *M* are the vertices of a quadrilateral. Determine whether *JKLM* is a trapezoid.

1. $J(-1, -1), K(0, 3), L(3, 3), M(4, -1)$
2. $J(-4, -2), K(-4, 3), L(2, 3), M(3, -5)$

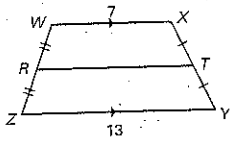
Find $m\angle B$, $m\angle C$, and $m\angle D$.

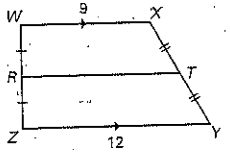
3. 

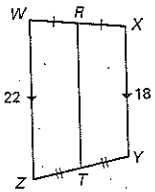
4. 

5. 

Find the length of the midsegment $\overline{RT}$.

6. 

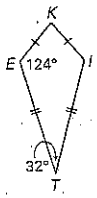
7. 

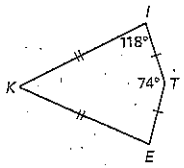
8. 

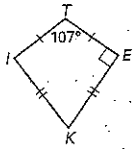
Tell whether the statement is *always*, *sometimes*, or *never* true.

9. A trapezoid is a parallelogram.
10. The bases of a trapezoid are parallel.
11. The base angles of an isosceles trapezoid are congruent.
12. The legs of a trapezoid are congruent.

***KITE* is a kite. Find $m\angle K$.**

13. 

14. 

15. 

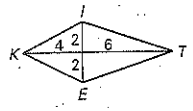
Name _____ Date _____

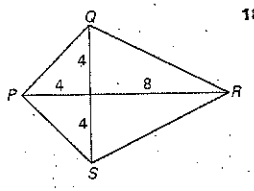
LESSON 8.5

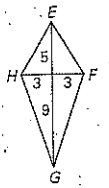
Practice A *continued*

For use with pages 541–549

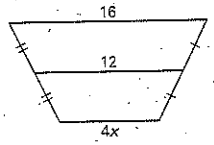
Use Theorem 8.18 and the Pythagorean Theorem to find the side lengths of the kite. Write the lengths in simplest radical form.

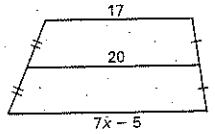
16. 

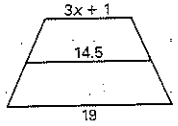
17. 

18. 

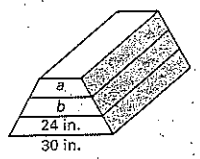
Find the value of *x*.

19. 

20. 

21. 

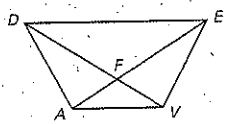
22. **Vaulting Box** Three vaulting boxes used by a gymnastics team are stacked on top of each other as shown. The sides are in the shape of a trapezoid. Find the lengths of a and b.



23. Complete the proof.

GIVEN: $\overline{DE} \parallel \overline{AV}$, $\triangle DAV \cong \triangle EVA$

PROVE: $DAVE$ is an isosceles trapezoid.



Statements	Reasons
1. $\overline{DE} \parallel \overline{AV}$	1. ?
2. $DAVE$ is a trapezoid.	2. ?
3. ?	3. Given
4. ?	4. Corresponding parts of $\cong$ $\triangle$ are $\cong$.
5. $DAVE$ is an isosceles trapezoid.	5. ?