53. CHALLENGE A polygon is *convex* if no line that contains a side of the polygon contains a point in the interior of the polygon. Consider a convex polygon with n sides.

diagonal

vertex

a. Use the combinations formula to write an expression for the number of line segments that join pairs of vertices on an n-sided polygon.

b. Use your result from part (a) to write a formula for the number of diagonals of an n-sided convex polygon.
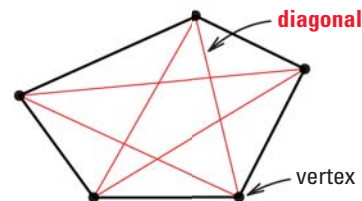
## MIXED REVIEW FOR TAKS

TAKS PRACTICE at classzone.com

54. ⟐ **TAKS PRACTICE** Ellen's next math test is worth 150 points and contains 42 questions. Each question is worth either 5 points or 3 points. Which system of equations can be used to determine the number f of 5 point questions and the number t of 3 point questions? *TAKS Obj. 4*

Ⓐ $f - t = 42$
$5f + 3t = 150$

Ⓑ $f + t = 42$
$3f + 5t = 150$

Ⓒ $f + t = 42$
$5f + 3t = 150$

Ⓓ $f + t = 42$
$5f + 5t = 150$

55. ⟐ **TAKS PRACTICE** An equilateral triangle is inscribed in a circle with a radius of 6 centimeters. What is the approximate area of the shaded region? *TAKS Obj. 8*

Ⓕ 19.6 cm^2

Ⓖ 66.3 cm^2

Ⓗ 74.9 cm^2

Ⓙ 81.9 cm^2

6 cm
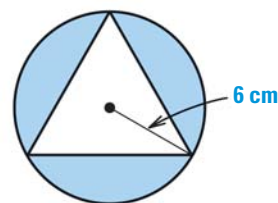
QUIZ for Lessons 10.1–10.2

For the given license plate configuration, find how many plates are possible if letters and digits (a) can be repeated and (b) cannot be repeated. *(p. 682)*

1. 2 letters followed by 3 digits

2. 3 digits followed by 3 letters

Find the number of distinguishable permutations of the letters in the word. *(p. 682)*

3. AWAY

4. IDAHO

5. LETTER

6. TENNESSEE

Find the number of combinations. *(p. 690)*

7. $_8C_6$

8. $_7C_4$

9. $_9C_0$

10. $_{12}C_{11}$

Use the binomial theorem to write the binomial expansion. *(p. 690)*

11. $(x + 5)^5$

12. $(2s - 3)^6$

13. $(3u + v)^4$

14. $(2x^3 - 3y)^5$

15. Find the coefficient of x^3 in the expansion of $(x + 2)^9$. *(p. 690)*

16. MENU CHOICES A pizza parlor runs a special where you can buy a large pizza with 1 cheese, 1 vegetable, and 2 meats for $12. You have a choice of 5 cheeses, 10 vegetables, and 6 meats. How many different variations of the pizza special are possible? *(p. 682)*

EXTRA PRACTICE for Lesson 10.2, p. 1019   ⟐ **ONLINE QUIZ** at classzone.com