Placement Test Instructions

This placement test can help you determine whether your child is ready for the Pre-Calculus Teaching Textbook. The test is not perfect, so in making any final placement decision also use common sense.

The student should work independently without the use of a calculator. It is not necessary to time the test, but most students will finish in less than $1\frac{1}{2}$ hours.

Scoring

The test is divided into two sections. Both sections include material from our Algebra II and Geometry products. Section 1 includes problems 1 – 15 and is the simpler part of the test. Section 2 includes problems 16 – 30 and is the more difficult part of the test.

The student is probably ready for Pre-Calculus if he/she makes the following scores on the two sections.

10 or more correct on Section 1 (problems 1 – 15)
and 8 or more correct on Section 2 (problems 16 – 30)

If the student's score falls below this level, then some remedial work in Geometry and Algebra 2 might be necessary.

Pre-Calculus Placement Test

Section 1

Solve each equation below.

1. $7x - 3(x + 6) = -2$ **2.** $x^2 + 5x = 0$

Write the equation for each line below.

3. Write the equation for the line crossing the point $(0, -4)$ and with slope $= 2$.

4. The line crossing the points $(1, 1)$ and $(2, -1)$.

Answer each question below.

5. In the equation $w = 3vu + q$, find the value of w when $q = -1$, $u = 2$, and $v = -3$.

6. Solve for x in the equation $z = bx + cy$.

7. Find $f(-2)$ for the function $f(x) = 2x^2 - 8x$.

Graph each two-variable equation below.
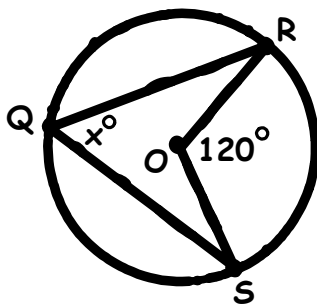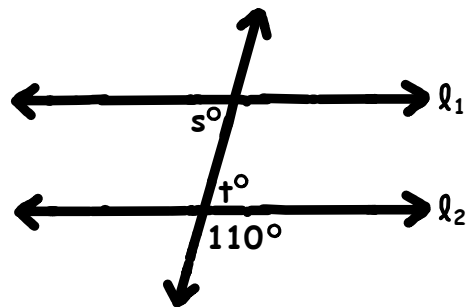
8. $y + x = 4$ **9.** $y = -2x^2$

10. $x^2 + y^2 = 9$

Find the missing quantities in each picture below. Make sure to fully simplify your answers.
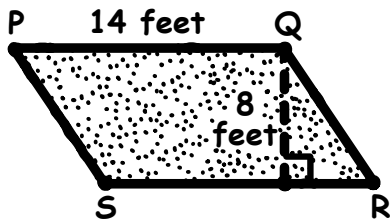
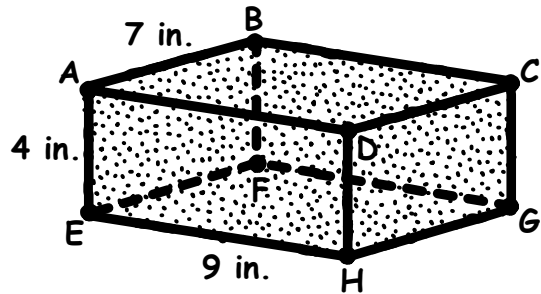**11.** Find x **12.** If $\ell_1 \parallel \ell_2$, find $s + t$.

Calculate the following quantity in each figure below.

13. The area of $\square PQRS$

14. The volume of the rectangular solid

P   14 feet   Q

8 feet

S   R

7 in.   B

A   C

4 in.

D

F

E

9 in.   H

G

15. The perimeter of quadrilateral *HIJK*. Estimate your answer to 2 decimal places.

H   3   I

8

45°

K   J
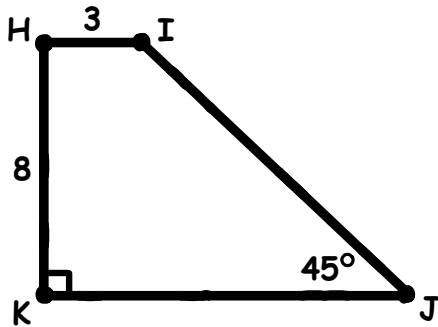
Section 2

Solve each equation below.

16. $|x-2|=14$

17. $x^2 + 6x - 7 = 0$

Solve the equation below using the quadratic formula.

18. $x^2 + x - 3 = 0$

Solve the system of equations below.

19. $\begin{cases} x + y = 19 \\ 5x - y = 23 \end{cases}$

20. $\begin{cases} 4x + 3y = 18 \\ x + y = 3 \end{cases}$

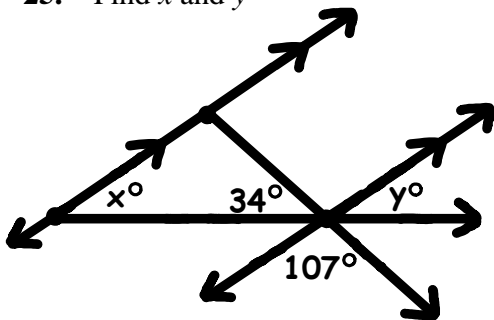Solve the inequality below.

21. $-7x + 5 < -4x - 13$

22. $\dfrac{3(x+7)}{5} > 2x$

Answer each question below.

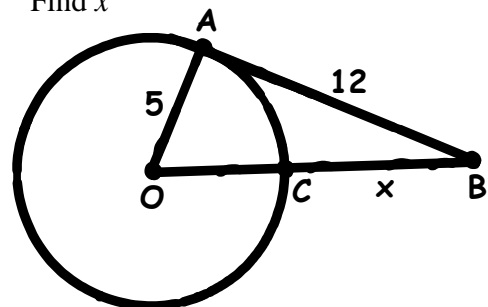**23.** Solve for n in the equation $bn = n + a$.

24. Simplify the expression $\dfrac{x^2 - y^2}{x^2 - 2xy + y^2}$.

Find the missing quantities in each picture below. Make sure to fully simplify your answers.
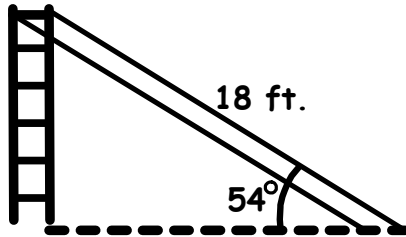
25. Find x and y

26. Find x

Use a trigonometric ratio to solve the word problem below.

27. The playground in the local park has a tall slide that is 18 feet long. If the end of the slide forms a $54°$ angle with the ground, how tall is the slide? Estimate your answer to 2 decimal places.
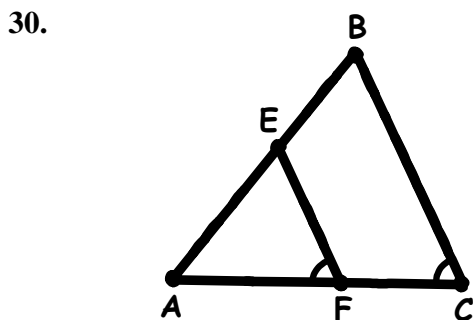

18 ft.

54°

28. In $\triangle MNG$, $m\angle M = 4x$, $m\angle N = 3x+12$, and $m\angle G = x-8$ (where $x > 0$). Find $m\angle N$. What is the longest side of $\triangle MNG$?

State which theorem can be used to prove that the pair of triangles below is congruent. If no method applies, say "none."
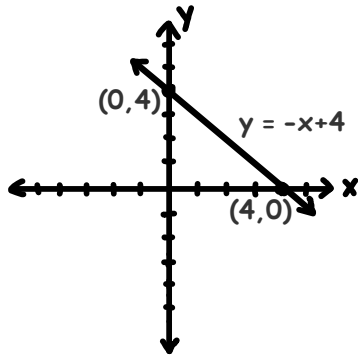
29.
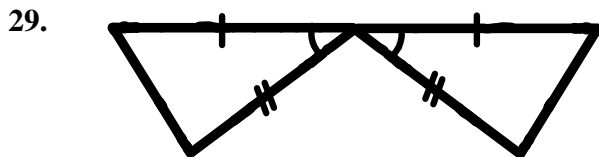
State which theorem can be used to prove that the pair of triangles ($\triangle ABC$ and $\triangle AEF$) below is similar. If no method applies, say "none."
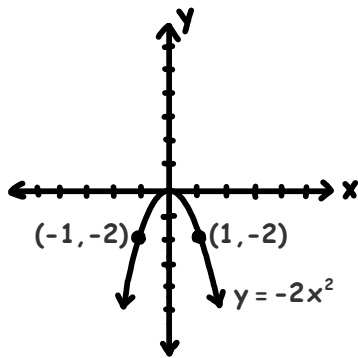
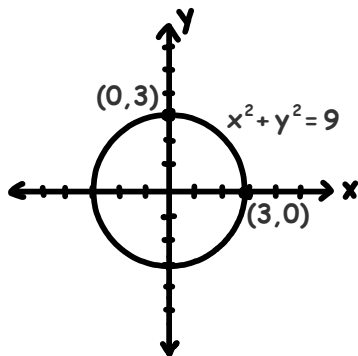**30.**

PRE-CALCULUS
PLACEMENT TEST

1. $x = 4$
2. $x = 0, \ -5$
3. $y = 2x - 4$ (or $y + 4 = 2x$)
4. $y = -2x + 3$ (or $y - 3 = -2x$)
5. $w = -19$
6. $x = \dfrac{z - cy}{b}$
7. $f(-2) = 24$
8.

9.

10.

11. $x = 60°$

12. $s + t = 140°$
13. 112 square feet
14. 252 cubic inches
15. 33.31
16. $x = -12, \ 16$
17. $x = -7, \ 1$
18. $x = \dfrac{-1 - \sqrt{13}}{2}, \ \dfrac{-1 + \sqrt{13}}{2}$
19. $x = 7, \ y = 12$
20. $x = 9, \ y = -6$
21. $x > 6$
22. $x < 3$
23. $n = \dfrac{a}{b - 1}$
24. $\dfrac{x + y}{x - y}$
25. $x = 39°, \ y = 39°$
26. $x = 8$
27. 14.56 feet
28. $m\angle N = 78°$, NG is the longest side
29. Side-Angle-Side theorem
30. Angle-Angle theorem