

St. Edmund Preparatory High School
Mathematics Department

Pre-Algebra 2/Trigonometry Summer Assignment
(Juniors/Sophomores)

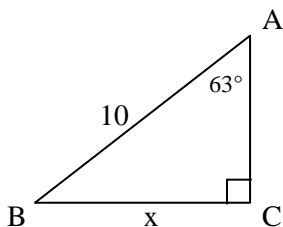
Name: _____

All students who will be taking Algebra 2/Trigonometry are required to complete this assignment. Answer all questions. In the spaces provided, clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. You may use a calculator. All students will be tested on this material in September.

Part 1 - Answer all multiple-choice questions in this part.

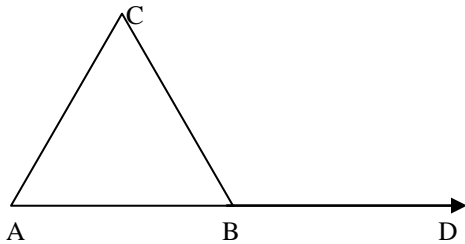
Use this space for
computations.

- The product of $4x^3$ and $6x^5$ is
(1) $10x^3$ (3) $10x^{15}$
(2) $24x^8$ (4) $24x^{15}$
- Expressed in decimal notation, 4.726×10^{-3} is
(1) 0.004726 (3) 472.6
(2) 0.04726 (4) 4,726
- Which equation is an illustration of the additive identity property?
(1) $x \cdot 1 = x$ (3) $x + 0 = x$
(2) $x - x = 0$ (4) $x \cdot \frac{1}{x} = 1$
- If $x \neq 0$, the expression $\frac{x^2 + 2x}{x}$ is equivalent to
(1) $x + 2$ (3) $3x$
(2) 2 (4) 4
- In the accompanying diagram of the right triangle $\triangle ACB$, $\angle C$ is a right angle, $m\angle A = 63$, and $AB = 10$. If BC is represented by x , which equation can be used to find x ?



- $\sin 63^\circ = \frac{x}{10}$ (3) $x = 10 \cos 63^\circ$
- $\tan 63^\circ = \frac{x}{10}$ (4) $x = \frac{\tan 27^\circ}{10}$

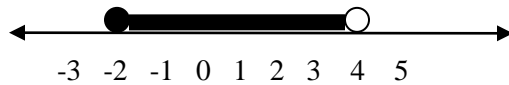
6. On a test, Marie gets 36 out of 48 questions correct. What percent of the questions did she answer correctly?
- (1) 75% (3) 12%
 (2) 25% (4) $133\frac{1}{3}\%$
7. Three sides of a triangle measure 6, 8, and 12. In a similar triangle, the length of the longest side is 28. The length of the shortest side of the similar triangle is
- (1) 6 (3) 14
 (2) 22 (4) 24
8. If the circumference of a circle is 10π inches, what is the area in square inches of the circle?
- (1) 10π (3) 25π
 (2) 50π (4) 100π
9. In the accompanying diagram of $\triangle ABC$, \overline{AB} is extended to D, exterior $\angle CBD$ measures 145° and $m\angle C = 75^\circ$.



What is $m\angle CAB$?

- (1) 35° (3) 110°
 (2) 70° (4) 220°
10. If $x = -4$ and $y = 3$, what is the value of $x - 3y^2$
- (1) -13 (3) -31
 (2) -23 (4) -85

18. Which inequality is represented in the graph below?



- (1) $-2 < x < 4$ (3) $-2 < x \leq 4$
(2) $-2 \leq x < 4$ (4) $-2 \leq x \leq 4$

19. If $x = 2y + 5$, then y equals

- (1) $2x - 5$ (3) $x - 5$
(2) $x - 7$ (4) $\frac{x - 5}{2}$

20. The formula $C = \frac{5}{9}(F - 32)$ can be used to find the Celsius temperature (C) for a given Fahrenheit temperature (F). What Celsius temperature is equal to a Fahrenheit temperature of 77° ?

- (1) 8° (3) 45°
(2) 25° (4) 171°

21. Which point does *not* lie on the graph of $3x - y = 7$?

- (1) (2, -1) (3) (-1, 4)
(2) (3, 2) (4) (1, -4)

22. The number .14114111411114111114... is

- (1) integral (3) irrational
(2) rational (4) whole

23. If the measure of an angle is represented by $2x$, which expression represents the measure of its complement?

- (1) $180 - 2x$ (3) $90 + 2x$
(2) $90 - 2x$ (4) $88x$

24. What are the factors of $x^2 - 10x - 24$?

- (1) $(x - 4)(x + 6)$ (3) $(x - 12)(x + 2)$
(2) $(x - 4)(x - 6)$ (4) $(x + 12)(x - 2)$

25. If $3(x - 2) = 2x + 6$, the value of x is

- (1) 0 (3) 12
(2) 5 (4) 20

Part 2 - Answer all questions in this part on a separate sheet of paper. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc.

26. Solve for x : $\frac{x}{x+6} = \frac{4}{7}$

27. Find the zeroes of the function $f(x) = x^2 - 3x - 18$

28. Mark says, "The number I see is odd." Jan says, "That same number is prime." The teacher says, "Mark is correct or Jan is correct." Some integers would make the teacher's statement true while other integers would make it false. Give and explain *one* example of when the teacher's statement is true. Give and explain *one* example of when the teacher's statement is false.

29. Vertex angle A of isosceles triangle ABC measures 20° more than three times the measure of angle B. Find the measure of angle C.

30. A wire is attached to a pole and forms an angle of elevation with the ground of 55° . If the pole is 25 feet high how long is the wire to the nearest tenth of a foot?

31. Tanisha and Rachel had lunch at the mall. Tanisha ordered three slices of pizza and two colas. Rachel ordered two slices of pizza and three colas. Tanisha's bill was \$6.00 and Rachel's bill was \$5.25. What was the price of one slice of pizza? What was the price of one cola?

32. Express $\frac{2y}{y+5} + \frac{10}{y+5}$ in simplest form.

33. Express $\frac{4x^2}{7y^2} \cdot \frac{21y^3}{20x^4}$ in simplest form.

34. Amy tossed a ball in the air in such a way that the path of the ball was modeled by the function $g(x) = -x^2 + 6x$. In the equation, y represents the height of the ball in feet and x is the time in seconds.

- Graph $g(x)$ for $0 \leq x \leq 6$ on a separate sheet of graph paper.
- At what time, x , is the ball at its highest point?

35. On a separate sheet of graph paper, graph the following piecewise function:

$$f(x) = \begin{cases} |x| & x < 2 \\ 4 & x \geq 2 \end{cases}$$