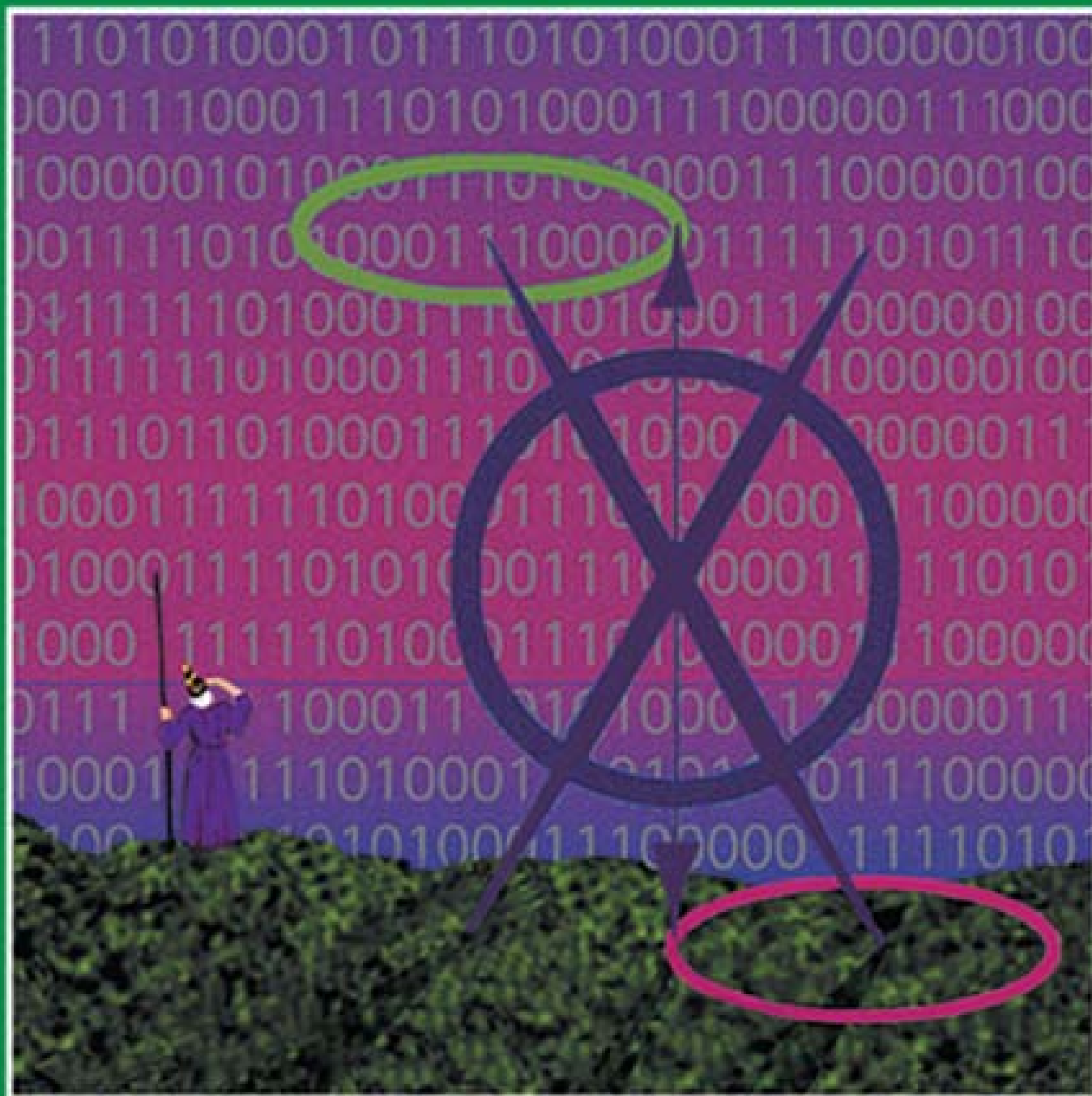


GEOMETRY & TRIGONOMETRY



QUESTION CATALOGUE

Geometry & Trigonometry

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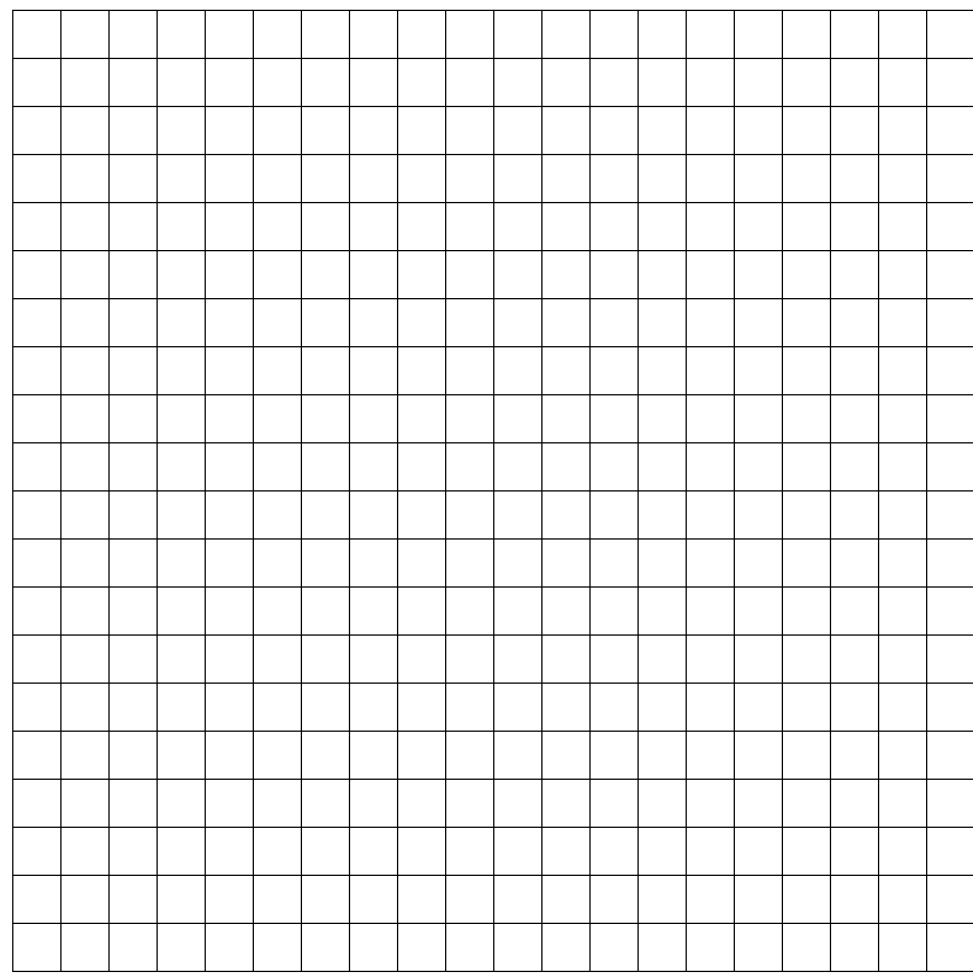
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3975. On the accompanying grid, draw and label quadrilateral $ABCD$ with points $A(1,2)$, $B(6,1)$, $C(7,6)$, and $D(3,7)$. On the same set of axes, plot and label quadrilateral $A'B'C'D'$, the reflection of quadrilateral $ABCD$ in the y -axis. Determine the area, in square units, of quadrilateral $A'B'C'D'$.



(1) Area = 24

141. Find the number of square centimeters in the area of a triangle with a base of 10 centimeters and an altitude of 5 centimeters.

25

175. The length of a rectangle is represented by $x - 5$ and the width by $x + 2$. The area of the rectangle is represented by

- (1) $x^2 + 3x - 10$
- (2) $2x - 3$
- (3) $x^2 - 3x - 10$
- (4) $4x - 6$

185. Each side of a regular hexagon is represented by $(x + 6)$. Which expression represents the perimeter of the hexagon?

- (1) $36x$
- (2) $5x + 30$
- (3) $6x + 6$
- (4) **$6x + 36$**

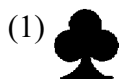
194. If the length of a rectangular solid is unchanged but the width and height are tripled, then the volume of the original figure is multiplied by a factor of

- (1) 6
- (2) **9**
- (3) 3
- (4) 27

II. The Coordinate Plane

A. Analytic Geometry

3403. Which symbol has two lines of symmetry?



3453. If $0 \leq x \leq 2\pi$, which equation is a line of symmetry for the graph of $y = \cos x$?

(1) $x = 0$

(3) $x = \pi$

(2) $x = 2\pi$

(4) $y = 0$

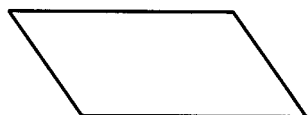
3516. Which figures shown below have horizontal line symmetry?



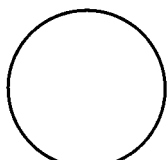
I



III



II



IV

(1) I and III

(3) II and IV

(2) I and IV

(4) I, II, and III

3583. What is an equation of the axis of symmetry of the graph of the parabola $y = 2x^2 - 8x + 7$?

(1) $y = -2$

(3) $x = -2$

(2) $y = 2$

(4) $x = 2$

3688. Helen is using a capital **H** in an art design. The **H** has

(1) only one line of symmetry

(2) only two points of symmetry

(3) two lines of symmetry and only one point of symmetry

(4) two lines of symmetry and two points of symmetry

4. Symmetry

a. Line Symmetry

3708. Which letter below has point symmetry, but does *not* have line symmetry?

(1) **H**

(3) **A**

(2) **N**

(4) **E**

3771. What is the turning point of the parabola whose equation is $y = -x^2 - 4x + 3$?

(1) $(-2, -1)$

(3) $(2, -9)$

(2) $(-2, 7)$

(4) $(2, -1)$

3788. What is the equation of the axis of symmetry of the parabola represented by the equation $y = 2x^2 + 16x - 11$?

(1) $x = -8$

(3) $x = -4$

(2) $x = 8$

(4) $x = 4$

3836. The equation of the axis of symmetry of the parabola $y = ax^2 + 4x - 2$ is $x = 1$. What is the value of a ?

(1) -2

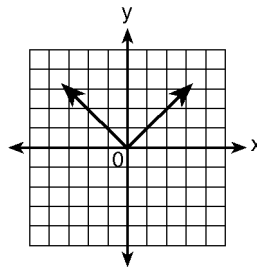
(3) -4

(2) 2

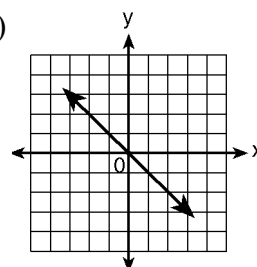
(4) 4

4053. Which graph is symmetric with respect to the y -axis?

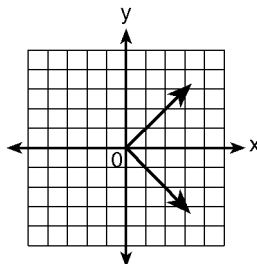
(1)



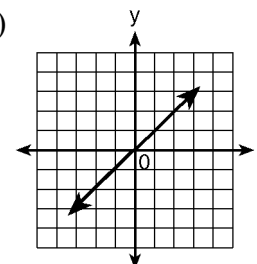
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(2)



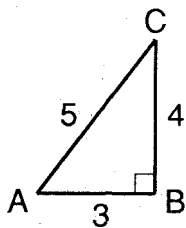
(4)



III. Functions and Trigonometry

A. Trigonometry

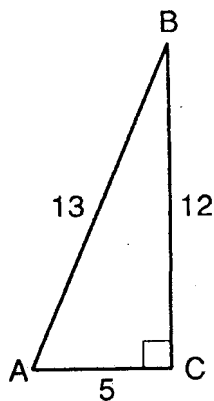
1979. In the accompanying diagram, the legs of right triangle ABC are 4 and 3, and the hypotenuse is 5.



What is the value of $\tan A$?

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

1983. In the accompanying diagram, the legs of right triangle ABC are 5 and 12 and the hypotenuse is 13.



What is the value of $\cos A$?

- (1) $\frac{12}{13}$ (3) $\frac{5}{13}$
 (2) $\frac{13}{5}$ (4) $\frac{12}{5}$

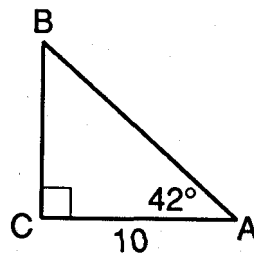
1993. The straight string of a kite makes an angle of elevation from the ground of 60° . The length of the string is 400 feet. What is the best approximation of the height of the kite?

- (1) 200 ft (3) 300 ft
 (2) 250 ft (4) 350 ft

1. Trigonometry of the Right Triangle

a. Sin, Cos, & Tan Functions

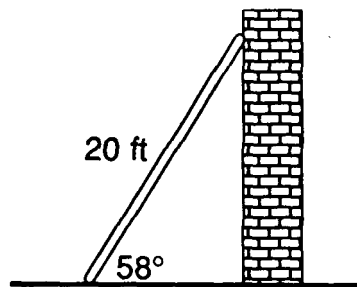
1987. In the diagram below, $m\angle C = 90$, $m\angle A$ and $CA = 10$.



Which equation can be used to find AB ?

- (1) $\tan 42^\circ = \frac{10}{AB}$ (3) $\cos 42^\circ = \frac{AB}{10}$
 (2) $\tan 42^\circ = \frac{AB}{10}$ (4) $\cos 42^\circ = \frac{10}{AB}$

1990. A 20-foot ladder is leaning against a wall. The foot of the ladder makes an angle of 58° with the ground. Find, to the nearest foot, the vertical distance from the top of the ladder to the ground.



17

1998. If $\tan A = 1.3400$, find the measure of $\angle A$ to the nearest degree.

53

2000. In isosceles triangle ABC , $AC = BC = 20$, $m\angle A = 68$, and \overline{CD} is the altitude to side \overline{AB} . What is the length of \overline{CD} to the nearest tenth?

- (1) 49.5 (3) 10.6
 (2) 18.5 (4) 7.5