

NAME _____

PYTHAGOREAN DIVISION

MEET 4

FEBRUARY 5, 2015

GRADE 8

30 MINUTES

ANSWER COLUMN

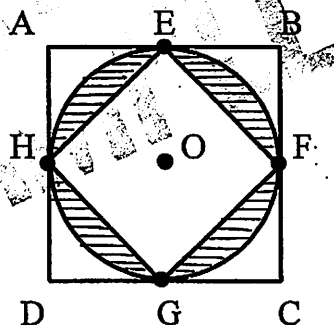
Directions: Place your answer to each question below in the answer column.

1) $\begin{vmatrix} a & c \\ b & d \end{vmatrix} = ad - bc$. Find the value of $\begin{vmatrix} x & 4 \\ 3 & 7 \end{vmatrix}$ in simplest form if $\begin{vmatrix} x & 4 \\ 3 & 7 \end{vmatrix} = x + 24$. 1) _____

2) A potato weighs 6 ounces plus $\frac{13}{16}$ of its weight. The potato weighs _____ lbs. 2) _____

3) The average of n numbers is 32. The average of 9 of those numbers is 26. The average of the remaining numbers is _____.
 a) $\frac{234}{n-9}$ b) $\frac{32n-234}{26}$ c) $\frac{12n-26}{n-9}$ d) $\frac{234-9n}{n+26}$ e) $\frac{32n-234}{n-9}$ 3) _____

4) Circle O is inscribed in square ABCD. E, F, G and H are midpoints of the sides of square ABCD. Square EFGH is thus formed. The area of the shaded region is $16(\pi - 2)$ sq.in. The perimeter of square ABCD is _____ in.



5) $\frac{27^{a^2} \cdot 9^{a^2}}{3} = 3^k$. $k =$ _____.
 a) $a^4 - 1$ b) $6a^4 - 1$ c) $6a^2 - 1$ d) $5a^2 - 1$ e) $3a^2 - 1$ 5) _____

6) The probability that it will rain tomorrow is x . The probability it will not rain tomorrow is y . The value of the expression $7x^2 + 14xy + 7y^2 - 1$ is _____. 6) _____

P 8-4

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The answer to each question is in parentheses at the beginning of each solution.

1) (30) $\left| \begin{array}{cc} x & 4 \\ 3 & 7 \end{array} \right| = 7x - 12 = x + 24. \quad 6x = 36; x = 6. \quad \text{Thus } \left| \begin{array}{cc} x & 4 \\ 3 & 7 \end{array} \right| = 30.$

2) (2) The 6 ounces is $\frac{3}{16}$ of its weight. The potato weighs $6 \times \frac{16}{3} = 32$ ounces = 2 lbs.
(Algebraically, $\frac{6}{\frac{3}{16}} = \frac{x}{1}$.)

3) (e) The sum of the n numbers is $32n$. The sum of the remaining $n - 9$ numbers is $32n - (9)(26) = 32n - 234$. The average of these $n - 9$ numbers is $\frac{32n - 234}{n - 9}$.

4) (32) If the area of the shaded region is $16(\pi - 2)$, the area of the circle must be 16π and the area of the inner square (EFGH) must be 32. The radius of circle O is 4" and a side of square ABCD is 8". The perimeter of square ABCD is 32"

5) (d) $\frac{27^{a^2} \cdot 9^{a^2}}{3} = \frac{(3^3)^{a^2} \cdot (3^2)^{a^2}}{3} = \frac{3^{3a^2} \cdot 3^{2a^2}}{3} = \frac{3^{3a^2+2a^2}}{3} = \frac{3^{5a^2}}{3} = 3^{5a^2-1}. \quad k = 5a^2 - 1$

6) (6) $P(\text{rain}) = x; P(\text{no rain}) = 1 - x = y. \quad x + y = 1.$
 $7x^2 + 14xy + 7y^2 - 1 = 7(x + y)^2 - 1 = 7 - 1 = 6.$