Problem Solving

Directions: Solve the problem and indicate the best of the answer choices given.
Numbers: All numbers used are real numbers.
Figures: A figure accompanying a problem solving question is intended to provide information useful in solving the problem. Figures are drawn as accurately as possible. Exceptions will be clearly noted. Lines shown as straight are straight, and lines that appear jagged are also straight. The positions of points, angles, regions, etc., exist in the order shown, and angle measures are greater than zero. All figures lie in a plane unless otherwise indicated.

1. Albert wants to put his 150 golf balls in boxes so that there will be an equal number of balls in each box. Each of the following could be the number of boxes EXCEPT

   (A) 3
   (B) 15
   (C) 20
   (D) 50
   (E) 75

2. $[5 - (4 - [2 - 3]) - 6] - 2 =$

   (A) 4
   (B) -6
   (C) -4
   (D) 12
   (E) -8

3. A newly born baby's weight increases by 20 percent each month. What will be the baby's weight when he is 3 months old, if he weighed 5 Kg when he was 1 month old?

   (A) 6.05 Kg
   (B) 6.5 Kg
   (C) 6.8 Kg
   (D) 7 Kg
   (E) 7.2 Kg

4. $8.406 - 3.878 =$

(A) 5.638
(B) 4.528
(C) 4.472
(D) 4.328
(E) 4.224

5. If $5x^2 = 8$ and $2a = 5$, then $20ax^2 =$

(A) 20
(B) 40
(C) 80
(D) 160
(E) 800

6. If $h = 0.25$ and $a = 0.03$, then $\sqrt{a \cdot h \cdot (1-h)}$

(A) 0.075
(B) $0.075 - \sqrt{0.075}$
(C) $\sqrt{0.075}$
(D) $\sqrt{0.75}$
(E) 0.75

7. An optometrist offers a daily contact lens for 20 cents or a weekly contact lens for 1$, when buying a yearly supply. Approximately how much does a person save in a year by buying the weekly lenses rather than the daily ones?

(A) $313
(B) $130.5
(C) $21
(D) $20
(E) $11

8. Between 2008 and 2012 Company N was given an annual federal incentive grant of \$120,000 or \$320,000 alternately. If the federal annual incentive grant that was given in 2009 was of \$320,000, what was the average (arithmetic mean) annual incentive grant given to Company N between 2008 and 2012?

(A) \$185,000
(B) \$190,000
(C) \$190,500
(D) \$200,000
(E) \$220,000

9. If x is a number such that $x^2 - 4x + 3 = 0$ and $x + 4 = \frac{5}{x}$, what is the value of x?

(A) -2
(B) -1
(C) 0
(D) 1
(E) 2

10. In 2010 approximately $\frac{1}{4}$ of the 43.3 thousand birds flying over Big Bend National Park during migration were mature males. If the number of mature females was $\frac{1}{2}$ the number of mature males and 6 times the number of young males, approximately how many thousands of young males flew over the national park that year during migration?

(A) 0.7
(B) 0.9
(C) 1.2
(D) 1.4
(E) 2.8

11. If a is an integer and $a = \frac{26 \cdot 33 \cdot 35}{39 \cdot b}$, then which of the following could <u>not</u> be the value of b?

(A) 10
(B) 14
(C) 35
(D) 55
(E) 65

12. In 2009 Mr. Strong sold silver coins for the total sum of \$160. In 2010 Mr. Strong sold 18 silver coins less than in 2009 and had a total income of \$130. Assuming that both in 2009 and 2010 he sold each silver coin for the same price, how many silver coins did he sell in 2009?

(A) 78
(B) 96
(C) 160
(D) 184
(E) 210

13. If $b \neq 0$ and $b = \sqrt{6ab - 9a^2}$, then, in terms of a, $b =$

(A) a^2
(B) $3a^2$
(C) $\frac{2a}{3}$
(D) $\frac{a}{3}$
(E) $3a$

14. If $(2x)^y$ is a prime integer greater than 2, and y is an integer, which of the following must be true?

I. x is not an integer.
II. y is an odd integer.
III. $y = 1$

(A) None
(B) I only
(C) II only
(D) III only
(E) I and III