

ANSWER KEY

- | | |
|-------|--------|
| (1) C | (6) A |
| (2) A | (7) B |
| (3) A | (8) B |
| (4) D | (9) D |
| (5) D | (10) B |

(11)

$$\begin{aligned}(m + 2n)^3 &= (m + 2n)^2(m + 2n) = (m^2 + 4mn + 4n^2)(m + 2n) \\ &= m^2(m + 2n) + 4mn(m + 2n) + 4n^2(m + 2n) \\ &= m^3 + 2m^2n + 4m^2n + 8mn^2 + 4mn^2 + 8n^3 \\ &= m^3 + 6m^2n + 12mn^2 + 8n^3\end{aligned}$$

(12) if discriminant, $b^2 - 4ac$, is...

positive	... 2 \mathbb{R} solutions
zero	... 1 \mathbb{R} solution
negative	... 0 \mathbb{R} solutions

(13) $A = P(1 + r)^2 \Rightarrow$

$$\begin{aligned}1,210 &= 1,000(1 + r)^2 \\ 1.21 &= (1 + r)^2 \\ 1.1 &= (1 + r) \\ r &= 0.1\end{aligned}$$

(14) Supply = Demand \Rightarrow

$$\begin{aligned}\frac{x}{6} + 9 &= \frac{24,840}{x} \\ x^2 + 54x &= 149,040 && \text{(multiply both sides by LCD = 6x)} \\ x^2 + 54x - 149,040 &= 0 && \text{(solve using quadratic formula)} \\ x &= \frac{-54 \pm \sqrt{54^2 - 4(-149,040)}}{2} \\ x^* &= 360, -414 && \text{(choose positive units only)} \\ p^* &= \frac{24,840}{x^*} = \frac{24,840}{360} = \$69\end{aligned}$$

GRADING SCALE

Raw Score	Final Score
28	100
27	98.5
26	97
25	95.5
24	94
23	92.5
22	91
21	89.5
20	88
19	86.5
18	85
17	83.5
16	82
15	80.5
14	79
13	77.5
12	76
11	74.5
10	73