Algebra 1
Unit 6 (part II) Review

Name: Key

1. Evaluate the expression: $\sqrt{121}$

11

2. Evaluate the expression: $-\sqrt{196}$

-14

3. Evaluate the expression: $\sqrt{b^2-4ac}$ when $a=4$, $b=6$, $c=-4$

$\sqrt{(6)^2-4(4)(-4)}$

$\sqrt{36+32}$

$\sqrt{68}$

$\sqrt{4}\sqrt{17}$

$2\sqrt{17}$

4. Evaluate the expression: $\sqrt{b^2-4ac}$ when $a=3$, $b=4$, $c=1$

$(4)^2-4(3)(1)$

$16-12$

4

2 solutions

5. Evaluate the expression: $\dfrac{-5\pm\sqrt{6}}{2}$.

(Round answers to the nearest hundredth.)

-1.28 and -3.72

6. Solve the equation: $x^2=100$

± 10

7. Solve the equation: $3x^2-6=21$

$+6 \quad +6$

$\frac{3x^2}{3}=\frac{27}{3}$

$\sqrt{x^2}=\sqrt{9}$

± 3

8. Solve the equation: $-5x^2+8=22$

$-8 \quad -8$

$\frac{-5x^2}{-5}=\frac{14}{-5}$

$\sqrt{x^2}=\sqrt{\frac{14}{-5}}$

no solution

9. Simplify the expression: $\sqrt{32}$

$2 \cdot 16$

$4\sqrt{2}$

10. Simplify the expression: $\pm\sqrt{275}$

$25 \cdot 11$

$\pm 5\sqrt{11}$

11. Simplify the expression: $\sqrt{\frac{36}{49}}$ $=$ $\frac{6}{7}$

12. Simplify the expression: $\sqrt{\frac{7}{144}}$ $=$ $\frac{\sqrt{7}}{12}$

13. Simplify the expression: $\dfrac{\sqrt{11}\cdot\sqrt{169}}{\sqrt{11}}$ $=$ 13

14. Simplify the expression: $\sqrt{-80}$

no solution

15. $3\sqrt{72}$

$2 \cdot 36$

$3(6\sqrt{2})$

$18\sqrt{2}$

16. $\sqrt{\frac{9}{4}}$

$\frac{3}{2}$

17. $60\sqrt{\frac{2}{25}}$

$\frac{60\sqrt{2}}{5}$ $=$ $12\sqrt{2}$

18. Solve by completing the square:
$p^2 - 14p + 30 = 6$

$p^2 - 14p + 49 = -24 + 49$

$\sqrt{(p-7)^2} = \sqrt{25}$

$p - 7 = \pm 5$

7 ± 5

12 and 2

19. Solve by completing the square.
$5 + y = -2x + x^2$

$\frac{0}{3} = \frac{x^2 - 2x - 5}{3}$

$1 + 5 = x^2 - 2x + 1$

$\pm\sqrt{6} = \sqrt{(x-1)^2}$

$1 \pm \sqrt{6}$

20. Solve the quadratic: $0 = x^2 - x - 15$

$x = \frac{-(-1) \pm \sqrt{(-1)^2 - 4(1)(-15)}}{2(1)}$

$= \frac{1 \pm \sqrt{61}}{2}$

21. Find the x-intercept(s) of: $h^2 + 10h = -24$

$\frac{-(10) \pm \sqrt{(10)^2 - 4(1)(24)}}{2(1)}$ OR

$h^2 + 10h + 24 = 0$

$(h+6)(h+4) = 0$

$-4, -6$

$\frac{-10 \pm \sqrt{4}}{2}$

$\frac{-10 \pm 2}{2}$

$-4, -6$

22. Determine the roots of $12n = 12n^2 + 3$

$\frac{0}{3} = \frac{12n^2 - 12n + 3}{3}$

$0 = 4n^2 - 4n + 1$

$\frac{-(-4) \pm \sqrt{(-4)^2 - 4(4)(1)}}{2(4)} \rightarrow \frac{4 \pm \sqrt{0}}{8} = \frac{1}{2}$

23. Convert $y = x^2 - 12x + 30$ to vertex form.

$y = x^2 - 12x + 36 + 30 + -36$

$y = (x-6)^2 - 6$

$V: (6, -6)$

For 24 & 25, look for a pattern in each table of values to determine which model best describes the data.

24.

x	–1	0	1	2	3
y	6	0	6	24	54

6 -6 -18 -30

12 12 12

Quadratic

25.

x	–2	–1	0	1	2
y	18	9	0	–9	–18

-9 -9 -9 -9

Linear

26. The local zoo keeps track of the number of dragonflies breeding in their insect exhibit each day. Determine which function best models the data.

Day	1	2	3	4	5
Dragonflies	9	18	36	72	144

$\frac{9}{18}$ $\frac{18}{36}$ $\frac{36}{72}$ $\frac{72}{144}$

$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$

Exponential

27. At liftoff, the space shuttle Discovery has a constant acceleration of 16.4 feet per second squared and an initial velocity of 1341 feet per second due to the rotation of Earth. The distance Discovery has traveled t seconds after liftoff is given by the equation $d(t) = 1341t + 8.2t^2$. How long after liftoff has Discovery traveled 40,000 feet? Round your answer to the nearest hundredth.

$40{,}000 = 8.2t^2 + 1341t$

$\frac{-(1341) \pm \sqrt{(1341)^2 - 4(8.2)(-40{,}000)}}{2(8.2)} = \frac{-1341 \pm 1763.598877}{16.4} =$ 25.77 and ~~-189.30~~ seconds