Algebra Development 2.2 KEY

Name the sets of numbers to which each of the following numbers belongs.

1. 3/4 — R, Q, Z, W, N
2. $\sqrt{49}$ — R, Q, Z, W, N
3. 12 — R, Q, Z, W, N
4. -5 — R, Q, Z
5. 0 — R, Q, Z, W
6. 6.5632197... — R, I
7. 7.04 — R, I
8. $\sqrt{33}$ — R, I
9. 8.75 — R, Q
10. π — R, I

State the property of real numbers illustrated in each problem.

11) $5(q + 4) = 5(q) + 5(4)$ — Distributive Property

12) $w + (-w) = 0$ — Additive Inverse

13) $a(1) = a$ — Multiplicative Identity

14) $b(6) = 6(b)$ — Commutative Prop. Of Multiplication

15) $z(3 \cdot m) = (z \cdot 3)m$ — Associative Prop. Of Multiplication

16) $(-8/3)(-3/8) = 1$ — Multiplicative Inverse

17) $k + 0 = k$ — Additive Identity

18) $d + (-d) = 5$ — Additive Inverse

19) $(p + 10) = (10 + p)$ — Commutative Prop. Of Addition

20) $12 - p = p - 12$ — Commutative Prop. Of Addition

21) $2 + (n + 7) = (2 + n) + 7$ — Associative Prop. Of Addition

Simplify the following expressions.

22) $\left(\frac{1+6}{3(2)}\right)^2$

$\left(\frac{7}{6}\right)^2$

$\frac{(7)^2}{(6)^2}$

$\frac{49}{36}$

23) $\left(\frac{2}{7}\right)^3$

24) $\left(\frac{7+5}{5(3)}\right)^4$

$\frac{256}{625}$

25) $\left(\frac{30}{45}\right)^5$

$\frac{32}{243}$

26) $\sqrt{\frac{64}{25}}$

27) $\sqrt{\frac{36}{81}}$

28) $\sqrt{\frac{1}{49}}$

$\frac{\sqrt{1}}{\sqrt{49}}$

$\frac{1}{7}$

29) $\sqrt[3]{\frac{1}{125}}$

30) $\sqrt[3]{\frac{27}{64}}$

$\frac{\sqrt[3]{27}}{\sqrt[3]{64}}$

$\frac{3}{4}$

31) $\sqrt{\frac{32}{18}}$

$\frac{4}{3}$

32) $\sqrt{\frac{50}{49}}$

$\frac{\sqrt{50}}{\sqrt{49}}$

$\frac{\sqrt{25 \cdot 2}}{7}$

$\frac{5\sqrt{2}}{7}$

33) $\sqrt{\frac{18}{7}}$

$\frac{\sqrt{9 \cdot 2}}{\sqrt{7}}$

$\frac{3\sqrt{2}}{\sqrt{7}} \cdot \frac{\sqrt{7}}{\sqrt{7}}$

$\frac{3\sqrt{14}}{\sqrt{49}}$

$\frac{3\sqrt{14}}{7}$

34) $\sqrt{\frac{8}{10}}$

35) $\sqrt{\frac{36}{32}}$

$\frac{6}{\sqrt{32}}$

$\frac{6}{4\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$

$\frac{6\sqrt{2}}{4 \cdot 2}$

$\frac{3\sqrt{2}}{4}$

36) $\sqrt[3]{\frac{1}{4}}$

37) $\sqrt[3]{\frac{64}{4}}$

$\frac{\sqrt[3]{64}}{\sqrt[3]{4}}$

$\frac{4}{\sqrt[3]{4}} \cdot \frac{\sqrt[3]{2}}{\sqrt[3]{2}}$

$\frac{4\sqrt[3]{2}}{2}$

$2\sqrt[3]{2}$

38) $\sqrt[3]{\frac{8}{9}}$

$\frac{2\sqrt[3]{3}}{3}$

39) $\sqrt{\frac{54}{15}}$

40) $\sqrt{\frac{80}{27}}$

$\frac{4\sqrt{15}}{9}$

41) $\sqrt{\frac{75}{24}}$