Fluency Table of Contents

Rational and Irrational Numbers— Skills Practice

Name: _____

Evaluate square roots and cube roots. Simplify each expression. **Form A**

1 $\sqrt{16} =$ _____

2 $\sqrt[3]{0} =$ _____

3 $\sqrt{1} =$ _____

4 $\sqrt{64} =$ _____

5 $\sqrt{144} =$ _____

6 $\sqrt{169} =$ _____

7 $\sqrt[3]{8} =$ _____

8 $\sqrt{100} =$ _____

9 $\sqrt{49} =$ _____

10 $\sqrt[3]{27} =$ _____

11 $\sqrt[3]{125} =$ _____

12 $\sqrt{2,500} =$ _____

13 $\sqrt[3]{64} =$ _____

14 $\sqrt{900} =$ _____

15 $\sqrt{36} =$ _____

16 $\sqrt{441} =$ _____

17 $\sqrt[3]{1,000} =$ _____

18 $\sqrt{25} =$ _____

Rational and Irrational Numbers— Skills Practice

Name: _____

Evaluate square roots and cube roots. Simplify each expression.   **Form B**

1 $\sqrt{9}$ = _____

2 $\sqrt[3]{1}$ = _____

3 $\sqrt{0}$ = _____

4 $\sqrt{81}$ = _____

5 $\sqrt{121}$ = _____

6 $\sqrt[3]{1,000}$ = _____

7 $\sqrt[3]{27}$ = _____

8 $\sqrt{25}$ = _____

9 $\sqrt{4}$ = _____

10 $\sqrt{225}$ = _____

11 $\sqrt{400}$ = _____

12 $\sqrt[3]{216}$ = _____

13 $\sqrt{64}$ = _____

14 $\sqrt{1,600}$ = _____

15 $\sqrt{625}$ = _____

16 $\sqrt[3]{8}$ = _____

17 $\sqrt[3]{512}$ = _____

18 $\sqrt{961}$ = _____

Rational and Irrational Numbers— Skills Practice

Name: _____

Solve equations of the form $x^2 = p$ and $x^3 = p$.   **Form A**

1 $x^2 = 1$; $x =$ _____

2 $x^2 = 49$; $x =$ _____

3 $x^3 = 8$; $x =$ _____

4 $x^2 = 100$; $x =$ _____

5 $x^2 = \frac{4}{9}$; $x =$ _____

6 $x^2 = 144$; $x =$ _____

7 $x^3 = \frac{1}{8}$; $x =$ _____

8 $x^2 = \frac{81}{100}$; $x =$ _____

9 $x^2 = 16$; $x =$ _____

10 $x^3 = 64$; $x =$ _____

11 $x^2 = 900$; $x =$ _____

12 $x^2 = \frac{1}{49}$; $x =$ _____

13 $x^3 = 125$; $x =$ _____

14 $x^2 = \frac{36}{49}$; $x =$ _____

15 $x^2 = \frac{9}{25}$; $x =$ _____

16 $x^2 = 2{,}500$; $x =$ _____

17 $x^3 = \frac{1}{27}$; $x =$ _____

18 $x^2 = 36$; $x =$ _____

Rational and Irrational Numbers— Skills Practice

Name: _____

Solve equations of the form $x^2 = p$ and $x^3 = p$.

Form B

1 $x^2 = 121; x =$ _____

2 $x^3 = 1{,}000; x =$ _____

3 $x^2 = \frac{25}{49}; x =$ _____

4 $x^2 = 25; x =$ _____

5 $x^2 = \frac{9}{64}; x =$ _____

6 $x^3 = 1; x =$ _____

7 $x^2 = 9; x =$ _____

8 $x^3 = \frac{27}{64}; x =$ _____

9 $x^2 = 0; x =$ _____

10 $x^2 = \frac{121}{144}; x =$ _____

11 $x^2 = 1{,}600; x =$ _____

12 $x^3 = \frac{64}{125}; x =$ _____

13 $x^2 = 441; x =$ _____

14 $x^2 = \frac{49}{81}; x =$ _____

15 $x^2 = 225; x =$ _____

16 $x^3 = 216; x =$ _____

17 $x^2 = 625; x =$ _____

18 $x^2 = \frac{1}{9}; x =$ _____

Rational and Irrational Numbers—
Skills Practice

Name: _____

Approximate irrational numbers.   **Form A**

Write the two consecutive whole numbers that the given number is between.

1 $\sqrt{5}$ _____

2 $\sqrt{10}$ _____

3 $\sqrt{8}$ _____

4 $\sqrt{28}$ _____

5 $\sqrt{23}$ _____

6 $\sqrt{84}$ _____

7 $\sqrt{45}$ _____

8 $\sqrt{29}$ _____

9 $\sqrt{70}$ _____

Approximate to the nearest whole number.

10 $\sqrt{5} \approx$ _____

11 $\sqrt{10} \approx$ _____

12 $\sqrt{8} \approx$ _____

13 $\sqrt{28} \approx$ _____

14 $\sqrt{23} \approx$ _____

15 $\sqrt{84} \approx$ _____

16 $\sqrt{45} \approx$ _____

17 $\sqrt{29} \approx$ _____

18 $\sqrt{70} \approx$ _____

Approximate to the nearest tenth.

19 $\sqrt{5} \approx$ _____

20 $\sqrt{10} \approx$ _____

21 $\sqrt{8} \approx$ _____

22 $\sqrt{28} \approx$ _____

23 $\sqrt{23} \approx$ _____

24 $\sqrt{84} \approx$ _____

Approximate to the nearest hundredth.

25 $\sqrt{5} \approx$ _____

26 $\sqrt{10} \approx$ _____

27 $\sqrt{8} \approx$ _____

Rational and Irrational Numbers— Skills Practice

Name: _____

Approximate irrational numbers.

Form B

Write the two consecutive whole numbers that the given number is between.

1 $\sqrt{2}$ _____

2 $\sqrt{3}$ _____

3 $\sqrt{7}$ _____

4 $\sqrt{14}$ _____

5 $\sqrt{55}$ _____

6 $\sqrt{39}$ _____

7 $\sqrt{99}$ _____

8 $\sqrt{39}$ _____

9 $\sqrt{24}$ _____

Approximate to the nearest whole number.

10 $\sqrt{2} \approx$ _____

11 $\sqrt{3} \approx$ _____

12 $\sqrt{7} \approx$ _____

13 $\sqrt{14} \approx$ _____

14 $\sqrt{55} \approx$ _____

15 $\sqrt{39} \approx$ _____

16 $\sqrt{99} \approx$ _____

17 $\sqrt{39} \approx$ _____

18 $\sqrt{24} \approx$ _____

Approximate to the nearest tenth.

19 $\sqrt{2} \approx$ _____

20 $\sqrt{3} \approx$ _____

21 $\sqrt{7} \approx$ _____

22 $\sqrt{14} \approx$ _____

23 $\sqrt{55} \approx$ _____

24 $\sqrt{39} \approx$ _____

Approximate to the nearest hundredth.

25 $\sqrt{2} \approx$ _____

26 $\sqrt{3} \approx$ _____

27 $\sqrt{7} \approx$ _____

Rational and Irrational Numbers—Skills Practice

Name: _____

Approximate expressions with irrational numbers.   **Form A**

Give the two consecutive whole numbers that the given expression is between.

1 $2\sqrt{3}$ _____

2 2π _____

3 $\sqrt{35} + 2$ _____

4 $\frac{4}{3}\pi$ _____

5 $4\sqrt{5}$ _____

6 $\sqrt{48} - 2$ _____

Approximate the value of the expression to the nearest whole number.

7 $\sqrt{5} + \sqrt{2} \approx$ _____

8 $\pi^2 \approx$ _____

9 $\frac{\sqrt{82}}{4} \approx$ _____

10 $3\pi \approx$ _____

11 $(\sqrt{2})^3 \approx$ _____

12 $3\sqrt{24} \approx$ _____

Approximate the value of the expression to the nearest tenth.

13 $\sqrt{3} - \sqrt{2} \approx$ _____

14 $\frac{\sqrt{2}}{2} \approx$ _____

15 $\frac{1}{\sqrt{3}} \approx$ _____

16 $\frac{\pi}{2} \approx$ _____

17 $\frac{2}{\sqrt{2}} \approx$ _____

18 $5 - \pi \approx$ _____

Rational and Irrational Numbers— Skills Practice

Name: _____

Approximate expressions with irrational numbers.   **Form B**

Give the two consecutive whole numbers that the given expression is between.

1 $2\sqrt{2}$ _____

2 4π _____

3 $\sqrt{35} - 2$ _____

4 $\frac{2}{3}\pi$ _____

5 $4\sqrt{8}$ _____

6 $\sqrt{48} + 2$ _____

Approximate the value of the expression to the nearest whole number.

7 $\sqrt{3} + \sqrt{2} \approx$ _____

8 $\pi^3 \approx$ _____

9 $\frac{\sqrt{65}}{3} \approx$ _____

10 $\frac{\pi}{3} \approx$ _____

11 $(\sqrt{3})^3 \approx$ _____

12 $4\sqrt{26} \approx$ _____

Approximate the value of the expression to the nearest tenth.

13 $\sqrt{5} - \sqrt{3} \approx$ _____

14 $\frac{\sqrt{3}}{2} \approx$ _____

15 $\frac{1}{\sqrt{2}} \approx$ _____

16 $5\pi \approx$ _____

17 $\frac{2}{\sqrt{3}} \approx$ _____

18 $6 - \pi \approx$ _____

Rational and Irrational Numbers— Skills Practice

Name: _____

Rewrite a repeating decimal as a fraction.   **Form A**

1 $0.\overline{6}$ = _____

2 $0.\overline{63}$ = _____

3 $0.\overline{4}$ = _____

4 $0.8\overline{3}$ = _____

5 $0.1\overline{3}$ = _____

6 $0.2\overline{7}$ = _____

7 $0.6\overline{1}$ = _____

8 $0.0\overline{6}$ = _____

9 $0.9\overline{4}$ = _____

10 $0.\overline{36}$ = _____

11 $0.\overline{7}$ = _____

12 $0.\overline{54}$ = _____

13 $0.41\overline{6}$ = _____

14 $0.8\overline{6}$ = _____

15 $0.08\overline{3}$ = _____

16 $0.\overline{27}$ = _____

17 $0.\overline{1}$ = _____

18 $0.\overline{90}$ = _____

Rational and Irrational Numbers— Skills Practice

Rewrite a repeating decimal as a fraction.

Form B

1 $0.\overline{3} =$ _____

2 $0.\overline{81} =$ _____

3 $0.\overline{5} =$ _____

4 $0.1\overline{6} =$ _____

5 $0.7\overline{3} =$ _____

6 $0.3\overline{8} =$ _____

7 $0.7\overline{2} =$ _____

8 $0.2\overline{6} =$ _____

9 $0.5\overline{3} =$ _____

10 $0.\overline{18} =$ _____

11 $0.\overline{2} =$ _____

12 $0.\overline{45} =$ _____

13 $0.58\overline{3} =$ _____

14 $0.0\overline{5} =$ _____

15 $0.91\overline{6} =$ _____

16 $0.\overline{09} =$ _____

17 $0.\overline{8} =$ _____

18 $0.\overline{72} =$ _____

Rational and Irrational Numbers— Repeated Reasoning

Name: _____

Find patterns in repeating decimals. Rewrite each decimal as a fraction.

Set A

1 $0.\overline{3} =$ _____

2 $0.0\overline{3} =$ _____

3 $0.00\overline{3} =$ _____

4 $0.\overline{4} =$ _____

5 $0.0\overline{4} =$ _____

6 $0.00\overline{4} =$ _____

7 $0.\overline{5} =$ _____

8 $0.0\overline{5} =$ _____

9 $0.00\overline{5} =$ _____

Set B

1 $0.\overline{3} =$ _____

2 $0.\overline{03} =$ _____

3 $0.\overline{003} =$ _____

4 $0.\overline{4} =$ _____

5 $0.\overline{04} =$ _____

6 $0.\overline{004} =$ _____

7 $0.\overline{5} =$ _____

8 $0.\overline{05} =$ _____

9 $0.\overline{005} =$ _____

Describe a pattern you see in one of the sets of problems above.

_____

_____

_____

_____

Integer Exponents—Skills Practice

Name: _____

Simplify expressions with exponents. **Form A**

Rewrite each expression using a single nonnegative exponent.

1 $y^5 \cdot y^7 =$ _____

2 $(m^3)^4 =$ _____

3 $n^6 \cdot n^5 =$ _____

4 $\dfrac{m^3}{m^9} =$ _____

5 $(n^9)^3 =$ _____

6 $\dfrac{w^8}{w^4} =$ _____

Evaluate each expression.

7 $4^2 \cdot 4^1 =$ _____

8 $2^3 \cdot 5^3 =$ _____

9 $(2^3)^4 =$ _____

10 $(5^2)^3 =$ _____

11 $6^2 \cdot 7^2 =$ _____

12 $\dfrac{3^3}{3^5} =$ _____

13 $3^3 \cdot 3^2 =$ _____

14 $\dfrac{8^3}{2^3} =$ _____

15 $\dfrac{2^6}{2^3} =$ _____

16 $2^4 \cdot 3^4 =$ _____

17 $\dfrac{4^2}{2^2} =$ _____

18 $\dfrac{5^3}{5^2} =$ _____

Integer Exponents—Skills Practice

Name: _____

Simplify expressions with exponents.   **Form B**

Rewrite each expression using a single nonnegative exponent.

1 $y^4 \cdot y^{11} =$ _____

2 $(m^2)^7 =$ _____

3 $n^8 \cdot n^5 =$ _____

4 $\dfrac{m^2}{m^6} =$ _____

5 $(n^8)^7 =$ _____

6 $\dfrac{w^{10}}{w^5} =$ _____

Evaluate each expression.

7 $5^2 \cdot 5^4 =$ _____

8 $2^1 \cdot 6^1 =$ _____

9 $(2^2)^5 =$ _____

10 $(3^2)^2 =$ _____

11 $4^2 \cdot 2^2 =$ _____

12 $\dfrac{3^6}{3^6} =$ _____

13 $2^2 \cdot 2^4 =$ _____

14 $\dfrac{10^3}{2^3} =$ _____

15 $\dfrac{2^5}{2^3} =$ _____

16 $4^3 \cdot 2^3 =$ _____

17 $\dfrac{4^2}{8^2} =$ _____

18 $\dfrac{4^3}{4^2} =$ _____

Integer Exponents—Skills Practice

Simplify more expressions with exponents. **Form A**

Rewrite each expression using a single exponent.

1 $y^{-3} \cdot y^{-7} =$ _____

2 $(m^{-2})^3 =$ _____

3 $n^{-2} \cdot n^8 =$ _____

4 $\dfrac{m^{-10}}{m^{-5}} =$ _____

5 $(n^{-4})^{-4} =$ _____

6 $\dfrac{w^6}{w^{-5}} =$ _____

Evaluate each expression.

7 $2^{-4} \cdot 2^{-2} =$ _____

8 $0^7 \cdot 2^7 =$ _____

9 $(2^{-3})^{-3} =$ _____

10 $(3^{-4})^0 =$ _____

11 $(-2)^{-2} \cdot (-2)^{-2} =$ _____

12 $\dfrac{(-6)^3}{(-6)^2} =$ _____

13 $3^0 \cdot 3^{-4} =$ _____

14 $\dfrac{7^{-2}}{3^{-2}} =$ _____

15 $\dfrac{4^{-2}}{4^{-5}} =$ _____

16 $(-5)^4 \cdot (-5)^{-3} =$ _____

17 $\dfrac{(-8)^0}{(-7)^0} =$ _____

18 $\dfrac{(-4)^3}{(-6)^3} =$ _____

Integer Exponents—Skills Practice

Name: _____

Simplify more expressions with exponents.

Form B

Rewrite each expression using a single exponent.

1 $y^{-4} \cdot y^{-5} =$ _____

2 $(m^{-3})^5 =$ _____

3 $n^{-3} \cdot n^6 =$ _____

4 $\dfrac{m^{-12}}{m^{-6}} =$ _____

5 $(n^{-2})^{-2} =$ _____

6 $\dfrac{w^5}{w^{-7}} =$ _____

Evaluate each expression.

7 $2^{-3} \cdot 2^{-2} =$ _____

8 $(-6)^4 \cdot (-6)^{-3} =$ _____

9 $(4^{-6})^0 =$ _____

10 $(3^{-2})^{-2} =$ _____

11 $(-3)^{-2} \cdot (-4)^{-2} =$ _____

12 $\dfrac{(-5)^4}{(-5)^3} =$ _____

13 $4^0 \cdot 4^{-3} =$ _____

14 $\dfrac{8^{-2}}{3^{-2}} =$ _____

15 $\dfrac{3^{-2}}{3^{-5}} =$ _____

16 $0^6 \cdot 2^6 =$ _____

17 $\dfrac{(-6)^3}{(3)^3} =$ _____

18 $\dfrac{(-6)^0}{(-5)^0} =$ _____

Integer Exponents—Repeated Reasoning

Name: _____

Find patterns in products of powers with the same base.

Expand each factor. Write the product in expanded form. Then write the product using an exponent. The first one is done for you.

1 $2^3 \times 2^2 = (2 \times 2 \times 2) \times (2 \times 2) = 2 \times 2 \times 2 \times 2 \times 2 = 2^5$

2 $3^3 \times 3^2 = $ _____

3 $4^3 \times 4^2 = $ _____

4 $5^3 \times 5^2 = $ _____

5 $6^3 \times 6^2 = $ _____

6 $7^3 \times 7^2 = $ _____

7 $8^3 \times 8^2 = $ _____

8 $9^3 \times 9^2 = $ _____

9 $n^3 \times n^2 = $ _____

10 $4.2^3 \times 4.2^2 = $ _____

Describe a pattern or relationship you see between the problems and the answers. Explain what the pattern means or why it happens.

_____

_____

_____

Integer Exponents—Repeated Reasoning

Name: _____

Find more patterns in products of powers with the same base. Write each expression as a power of a single number.

Set A

1 $3^2 \times 3^1 = $ _____

2 $3^{-2} \times 3^{-1} = $ _____

3 $3^2 \times 3^2 = $ _____

4 $3^{-2} \times 3^{-2} = $ _____

5 $3^2 \times 3^3 = $ _____

6 $3^{-2} \times 3^{-3} = $ _____

7 $3^2 \times 3^4 = $ _____

8 $3^{-2} \times 3^{-4} = $ _____

9 $3^2 \times 3^5 = $ _____

10 $3^{-2} \times 3^{-5} = $ _____

11 $3^2 \times 3^6 = $ _____

12 $3^{-2} \times 3^{-6} = $ _____

Set B

1 $3^{-2} \times 3^1 = $ _____

2 $3^{-2} \times 3^2 = $ _____

3 $3^{-2} \times 3^3 = $ _____

4 $3^2 \times 3^{-1} = $ _____

5 $3^2 \times 3^{-2} = $ _____

6 $3^2 \times 3^{-3} = $ _____

Describe a pattern you see in one of the sets of problems above.

_____

_____

_____

Find patterns in quotients of powers with the same base.

Expand each term in the quotient of powers. Write the quotient in expanded form. Then write the quotient using an exponent. The first one has been done for you.

1 $2^5 \div 2^3 = (2 \cdot 2 \cdot 2 \cdot 2 \cdot 2) \div (2 \cdot 2 \cdot 2) = 2 \cdot 2 = 2^2$

2 $3^5 \div 3^3 = $ _____

3 $4^5 \div 4^3 = $ _____

4 $5^5 \div 5^3 = $ _____

5 $6^5 \div 6^3 = $ _____

6 $7^5 \div 7^3 = $ _____

7 $8^5 \div 8^3 = $ _____

8 $9^5 \div 9^3 = $ _____

9 $n^5 \div n^3 = $ _____

10 $6.3^5 \div 6.3^3 = $ _____

Describe a pattern or relationship you see between the problems and the answers. Explain what the pattern means or why it happens.

_____

_____

_____

Name: _____

Find more patterns in quotients of powers with the same base.

Expand each term in the quotient of powers. Write the quotient in expanded form. Then write the quotient using an exponent. The first one has been done for you.

1 $2^4 \div 2^1 = (2 \times 2 \times 2 \times 2) \div (2) = 2 \times 2 \times 2 = 2^3$

2 $2^4 \div 2^2 =$ _____

3 $2^4 \div 2^3 =$ _____

4 $2^4 \div 2^4 =$ _____

5 $2^4 \div 2^5 =$ _____

6 $2^4 \div 2^6 =$ _____

7 $2^4 \div 2^7 =$ _____

8 $4.3^5 \div 4.3^2 =$ _____

Describe a pattern or relationship you see between the problems and the answers. Explain what the pattern means or why it happens.

_____

_____

_____

Integer Exponents—Repeated Reasoning

Name: _____

Find patterns in products of powers with different bases.

Expand each factor. Rewrite the expanded form as a power of a product. Then simplify. The first one has been done for you.

Set A

1 $2^2 \times 4^2 = 2 \times 2 \times 4 \times 4 = (2 \times 4)^2 = 8^2$

2 $2^3 \times 4^3 =$ _____

3 $2^4 \times 4^4 =$ _____

4 $3^2 \times 5^2 =$ _____

5 $3^3 \times 5^3 =$ _____

6 $n^5 \times m^5 =$ _____

Write the base as a product of two factors. Use the exponent to expand the product. Then write it as a product of two exponential expressions. The first one has been done for you.

Set B

1 $10^2 = (2 \times 5)^2 = 2 \times 5 \times 2 \times 5 = 2^2 \times 5^2$

2 $10^3 =$ _____

3 $10^4 =$ _____

4 $6^2 =$ _____

5 $6^3 =$ _____

6 $(mn)^5 =$ _____

Describe a pattern you see in one of the sets of problems above.

_____

_____

_____

Scientific Notation—Skills Practice

Write the numbers in scientific notation.   **Form A**

1 4,500 = _____

2 0.0578 = _____

3 57 = _____

4 0.006256 = _____

5 730 = _____

6 0.000042 = _____

7 0.007 = _____

8 25.63 = _____

9 300.25 = _____

10 0.1456 = _____

11 56,325.2 = _____

12 9,214.3 = _____

Write the numbers in standard form.

13 7.65×10^3 = _____

14 5.21×10^{-1} = _____

15 7.528×10^2 = _____

16 2.169×10^{-4} = _____

17 2.7345×10^1 = _____

18 4.6×10^{-5} = _____

19 8.752×10^5 = _____

20 5.0×10^{-3} = _____

21 8.0×10^7 = _____

22 5.639×10^{-2} = _____

23 5.3725×10^4 = _____

24 1.3×10^{-6} = _____

Scientific Notation—Skills Practice

Name: _____

Write the numbers in scientific notation. Form B

1 $6,500 =$ _____

2 $0.0354 =$ _____

3 $69 =$ _____

4 $0.007257 =$ _____

5 $820 =$ _____

6 $0.000053 =$ _____

7 $0.002 =$ _____

8 $37.85 =$ _____

9 $400.75 =$ _____

10 $0.2531 =$ _____

11 $76,213.8 =$ _____

12 $1,876.4 =$ _____

Write the numbers in standard form.

13 $8.72 \times 10^3 =$ _____

14 $3.79 \times 10^{-1} =$ _____

15 $3.628 \times 10^2 =$ _____

16 $9.786 \times 10^{-4} =$ _____

17 $1.4278 \times 10^1 =$ _____

18 $3.4 \times 10^{-5} =$ _____

19 $6.251 \times 10^5 =$ _____

20 $4.0 \times 10^{-3} =$ _____

21 $9.0 \times 10^7 =$ _____

22 $6.213 \times 10^{-2} =$ _____

23 $4.1723 \times 10^4 =$ _____

24 $4.6 \times 10^{-6} =$ _____

Scientific Notation—Skills Practice

Name: _____

Perform operations with numbers written in scientific notation. Write your answers in standard form.

Form A

1 $(4.2 \times 10^4) \times (2 \times 10^3) =$ _____

2 $(2.8 \times 10^5) \div (7 \times 10^{-2}) =$ _____

3 $(3.9 \times 10^6) + (4.1 \times 10^7) =$ _____

4 $(5.05 \times 10^{-3}) \div (5.05 \times 10^{-2}) =$ _____

5 $(3.21 \times 10^{-3}) \cdot (4.6 \times 10^3) =$ _____

6 $(4.5 \times 10^4) + (1.1 \times 10^1) =$ _____

7 $(2.65 \times 10^3) - (1.21 \times 10^3) =$ _____

8 $(7.5 \times 10^{-2}) + (8.6 \times 10^2) =$ _____

9 $(6.21 \times 10^{-2}) - (4.32 \times 10^{-4}) =$ _____

10 $(8.6 \times 10^2) + (9.4 \times 10^2) =$ _____

11 $(2.6 \times 10^5) \cdot (3.8 \times 10^{-3}) =$ _____

12 $(1.7 \times 10^{-1}) + (2.59 \times 10^{-2}) =$ _____

13 $\dfrac{4.62 \times 10^6}{2.2 \times 10^3} =$ _____

14 $(4.25 \times 10^5) \cdot (3.5 \times 10^{-5}) =$ _____

Name: _____

Perform operations with numbers written in scientific notation. Write your answers in standard form.

Form B

1 $(3.1 \times 10^4) \times (3 \times 10^3) =$ _____

2 $(3.6 \times 10^5) \div (4 \times 10^{-2}) =$ _____

3 $(2.7 \times 10^6) + (5.1 \times 10^7) =$ _____

4 $(6.39 \times 10^{-2}) \div (3 \times 10^{-3}) =$ _____

5 $(4.78 \times 10^{-3}) \times (2.1 \times 10^3) =$ _____

6 $(5.84 \times 10^4) + (6.2 \times 10^1) =$ _____

7 $(3.85 \times 10^3) - (1.41 \times 10^3) =$ _____

8 $(3.5 \times 10^{-2}) + (7.9 \times 10^2) =$ _____

9 $(5.31 \times 10^{-2}) - (2.34 \times 10^{-4}) =$ _____

10 $(7.2 \times 10^2) + (8.7 \times 10^2) =$ _____

11 $(4.6 \times 10^5) \times (2.8 \times 10^{-3}) =$ _____

12 $(1.9 \times 10^{-1}) + (3.69 \times 10^{-2}) =$ _____

13 $\dfrac{1.725 \times 10^6}{7.5 \times 10^3} =$ _____

14 $(4.87 \times 10^6) \times (4.3 \times 10^{-5}) =$ _____

Name: _____

Solve and tell whether the equation has 1 solution, no solution, or infinitely many solutions.

Form A

1 $-3x + 8 - 5x = 21 - 8x$

2 $-2y - 7 + 5y = 13 - 2y$

3 $12 - 8z = -20 - 4z$

4 $7 + 2f = 9 + 4f$

5 $6 + 3m - 4 = -5 + 3m + 7$

6 $d + 6 + 2d = 4d + 9$

7 $4p - 4 = 3p - 3$

8 $4c + 12 = c - 3$

9 $7d - 8 = 3d - 8$

10 $-9n - 8 = -10n - 7$

11 $6 + 8b = -6 + 2b$

12 $7g + 5 - 2g = 5 + 5g$

Name: _____

Solve and tell whether the equation has 1 solution, no solution, or infinitely many solutions.

Form B

1 $-3x - 8 + 5x = 17 - 3x$

2 $-4a + 6 - 2a = 12 - 6a$

3 $14 - 7z = -22 - 3z$

4 $9 + 4g - 6 = -3 + 4g + 6$

5 $8 + 3d = 10 + 5d$

6 $5w - 5 = 4w - 4$

7 $c + 7 + 3c = 5c + 11$

8 $9 + 6p = -9 - 3p$

9 $5f + 14 = f - 6$

10 $9h - 7 = 4h - 7$

11 $6z + 3 - 3z = 3 + 3z$

12 $-9b - 10 = -10b - 9$

Solutions to Linear Equations— Skills Practice

Name: _____

Use the distributive property as needed to solve and tell whether the equation has 1 solution, no solution, or infinitely many solutions.

Form A

1 $6x - 12 = 6(x - 2)$

2 $\frac{4}{5} - \frac{3}{10}m = \frac{1}{10}m - \frac{4}{5}$

3 $-15x - 4 + 6x = -4 - 9x$

4 $7(y - 6) = 7y + 42$

5 $4(p + 5) = 6p + 20$

6 $3m + 11 = \frac{1}{3}(9m + 33)$

7 $15y - 4 = 12y - 28$

8 $-8 + 2n + 14 = 4n - 16$

9 $-\frac{1}{2}(4a + 8) = -2a + 4$

10 $3(m - 4) = 6m - 15$

11 $8(2y + 5) = 9y + 12$

12 $2n + 14 = 3n + 5$

Solutions to Linear Equations—
Skills Practice

Name: _____

Use the distributive property as needed to solve and tell whether the equation has 1 solution, no solution, or infinitely many solutions.

Form B

1 $\frac{2}{3} - \frac{1}{6}m = \frac{1}{6}m - \frac{2}{3}$

2 $7x - 14 = 7(x - 2)$

3 $7(p + 4) = 9p + 28$

4 $-16x - 8 + 9x = -8 - 7x$

5 $4m + 11 = \frac{1}{8}(32m + 88)$

6 $8(y - 7) = 8y + 56$

7 $-9 + 4n + 18 = 7n - 24$

8 $14y - 6 = 11y - 27$

9 $5(m - 3) = 7m - 17$

10 $-\frac{1}{4}(8a + 20) = -2a + 5$

11 $7(4y + 5) = 19y + 8$

12 $-9n - 8 - 3n = 6n - 8$

Name: _____

Solve systems of equations using substitution.   **Form A**

1 $y = 4x$
$2y + 2.5x = 105$

2 $x + 10 = -8y$
$-8y + x = 6$

3 $x = -6y$
$3x + 6y = -24$

4 $x - 9 = 7y$
$7y + x = -19$

5 $y = 7x$
$-2x + y = 15$

6 $x + 5 = -4y$
$-4y + x = 43$

7 $x - 1 = \frac{1}{2}y$
$\frac{1}{2}y + x = 11$

8 $y = \frac{1}{3}x$
$-6x + 3y = 30$

9 $x = 1.5y$
$-8x - 2y = -84$

10 $y = 0.5x$
$8y - 6x = -20$

Name: _____

Solve systems of equations using substitution.   **Form B**

1 $x = 7y$
$3x + 2y = 23$

2 $x = 4y$
$0.5y + 2x = 85$

3 $x - 6 = 5y$
$5y + x = -24$

4 $x = 9y$
$5x + 3y = -48$

5 $y = \frac{1}{5}x$
$-7x + 5y = 60$

6 $x - 8 = \frac{1}{6}y$
$\frac{1}{6}y + x = 10$

7 $y = 3x$
$-2x + y = 5$

8 $x + 7 = -3y$
$-3y + x = 41$

9 $y = 1.5x$
$10y - 3x = 96$

10 $x + 7 = 8y$
$8y + x = 9$

Systems of Equations—Skills Practice

Name: _____

Solve systems of equations using any method.   **Form A**

1 $3x - 4y = 7$
$3x - 4y = 9$

2 $10x - 15y = 30$
$2x - 4y = 4$

3 $y = 2x$
$4y + 3x = 55$

4 $6x + 2y = 20$
$3x + 2y = 8$

5 $14y - 7x = 21$
$x - 2y = -3$

6 $9x - 6y = 3$
$-9x + 4y = 7$

7 $7y + 8x = 15$
$3y + 8x = 11$

8 $7x - 6y = 4$
$-6y + 7x = 5$

9 $5x - 4y = 9$
$3x + 8y = -5$

10 $x + 4 = 6y$
$6y + x = 8$

Name: _____

Solve systems of equations using any method.   **Form B**

1 $20x - 10y = 50$
    $10x - 15y = -5$

2 $2x - 6y = 8$
    $2x - 6y = 3$

3 $y = 3x$
    $5y + 5x = 40$

4 $7x + 4y = 30$
    $3x + 4y = 6$

5 $8x - 4y = 4$
    $-8x + 2y = 6$

6 $15y - 5x = 20$
    $x - 3y = -4$

7 $8x - 4y = 3$
    $-4y + 8x = 9$

8 $9y + 6x = 15$
    $2y + 6x = 8$

9 $10x + 4y = 8$
    $5x + 8y = 16$

10 $x = -2y$
    $3y + 5x = -21$

Name: _____

Solve systems of equations involving fractions and decimals. **Form A**

1 $x = 0.5y$
$6x + 2y = 20$

2 $2x + 3y = 5$
$0.25x + 0.25y = 0.5$

3 $\frac{3}{5}x + \frac{7}{10}y = 20$
$2x - 7y = -120$

4 $x = \frac{1}{4}y$
$12x - 4y = 8$

5 $4x + 5y = 42$
$\frac{2}{3}x - \frac{1}{6}y = 1$

6 $-8x - 7y = 3$
$\frac{4}{5}x + \frac{7}{10}y = \frac{3}{10}$

7 $\frac{1}{8}x + \frac{1}{4}y = 2$
$x + 2y = 16$

8 $x = \frac{1}{6}y$
$36x - 2y = 24$

9 $6x - 5y = 36$
$0.5x + 2.5y = 3$

10 $2.5x + 5y = 50$
$1.25x + 1.5y = 21$

Solve systems of equations involving fractions and decimals.   **Form B**

1 $x = -0.5y$

$8x + 6y = 12$

2 $-6x + 12y = 14$

$1.5x - 3y = -3.5$

3 $4x - 7y = 32$

$0.5x + 3.5y = 4$

4 $2x + 6y = 8$

$0.25x + 0.25y = 0.5$

5 $\frac{4}{5}x + \frac{3}{10}y = 13$

$2x - 3y = -80$

6 $y = \frac{1}{5}x$

$3x - 25y = 20$

7 $\frac{1}{5}x + \frac{1}{10}y = 3$

$2x + y = 30$

8 $4x + y = 12$

$\frac{1}{3}x - \frac{1}{6}y = -2$

9 $-6x - 3y = 5$

$\frac{3}{4}x + \frac{3}{8}y = \frac{5}{8}$

10 $2x + 5y = 24$

$\frac{1}{2}x - \frac{3}{4}y = -2$

Linear Functions—Skills Practice

Name: _____

Find the slope of the line through two given points.

Form A

1 (7, 7) and (9, 9)

slope = _____

2 (8, 11) and (5, 5)

slope = _____

3 (2, 5) and (5, 8)

slope = _____

4 (−2, −3) and (−1, −6)

slope = _____

5 (−1, −4) and (3, 12)

slope = _____

6 (0, 0) and (6, 5)

slope = _____

7 (5, 6) and (9, 8)

slope = _____

8 (−2, −13) and (−4, −3)

slope = _____

9 (5, 9) and (3, 11)

slope = _____

10 (−8, 17) and (−5, 19)

slope = _____

11 $\left(\frac{1}{4}, 4\right)$ and $\left(\frac{3}{4}, 5\right)$

slope = _____

12 (6, 3) and (−6, 6)

slope = _____

13 (8, 5) and (4, −7)

slope = _____

14 $\left(\frac{1}{8}, -2\right)$ and $\left(\frac{5}{8}, -4\right)$

slope = _____

15 (0, 4) and (−10, 0)

slope = _____

16 (3, 8) and (4, 6)

slope = _____

17 (4, 9) and (7, 9)

slope = _____

18 (−3, 0) and (0, 9)

slope = _____

19 (−2, 3) and (4, −2)

slope = _____

20 (1, 1) and (−3, 9)

slope = _____

21 $\left(-\frac{1}{4}, \frac{1}{4}\right)$ and (−2, 2)

slope = _____

Linear Functions—Skills Practice

Name: _____

Find the slope of the line through two given points.   **Form B**

1 (7, 10) and (4, 4)

slope = _____

2 (6, 6) and (14, 14)

slope = _____

3 (−3, −4) and (−2, −7)

slope = _____

4 (0, 0) and (9, 4)

slope = _____

5 (−1, −10) and (4, 15)

slope = _____

6 (2, 4) and (4, 6)

slope = _____

7 $\left(\frac{1}{4}, -3\right)$ and $\left(\frac{3}{4}, -5\right)$

slope = _____

8 $\left(-\frac{1}{5}, \frac{1}{5}\right)$ and (−2, 2)

slope = _____

9 (2, 7) and (6, 9)

slope = _____

10 (−2, −5) and (−4, −11)

slope = _____

11 (−7, 16) and (−4, 18)

slope = _____

12 (9, 6) and (−9, 9)

slope = _____

13 $\left(\frac{1}{8}, 6\right)$ and $\left(\frac{5}{8}, 7\right)$

slope = _____

14 (1, 1) and (−2, 7)

slope = _____

15 (−2, 0) and (0, −10)

slope = _____

16 (0, −6) and (−8, 0)

slope = _____

17 (4, 12) and (5, 10)

slope = _____

18 (6, 7) and (1, 12)

slope = _____

19 (9, 6) and (4, −9)

slope = _____

20 (2, −1) and (7, 2)

slope = _____

21 (6, 8) and (9, 8)

slope = _____

Linear Functions—Skills Practice

Name: _____

Determine the rate of change and the initial value of the line through two given points.

1 (5, 14) and (3, 10)
Rate of change = _____
Initial value = _____

2 (9, 32) and (4, 17)
Rate of change = _____
Initial value = _____

3 (8, 5) and (4, 7)
Rate of change = _____
Initial value = _____

4 (4, 8) and (12, 10)
Rate of change = _____
Initial value = _____

5 (3, 13) and (6, 14)
Rate of change = _____
Initial value = _____

6 (0, 4) and (7, 4)
Rate of change = _____
Initial value = _____

7 (1, 6) and (6, 1)
Rate of change = _____
Initial value = _____

8 (3, 8) and (12, 2)
Rate of change = _____
Initial value = _____

9 (4, 1) and (8, 2)
Rate of change = _____
Initial value = _____

10 (1, 3) and (3, 9)
Rate of change = _____
Initial value = _____

11 (2, 8) and (4, 8)
Rate of change = _____
Initial value = _____

12 (5, 12) and (2, 6)
Rate of change = _____
Initial value = _____

Give the rate of change and the initial value from each description.

13 Yamini starts a savings account with $12. She will put in an equal amount each week. After 6 weeks, she will have $54.
Rate of change per week = _____
Initial value = _____

14 Jordan has some music books. He will buy 9 new music books each year. He will have 52 music books in 5 years.
Rate of change per year = _____
Initial value = _____

Name: _____

Determine the rate of change and the initial value of the line through two given points.

Form B

1 (1, 4) and (3, 12)
Rate of change = _____
Initial value = _____

2 (5, 18) and (2, 9)
Rate of change = _____
Initial value = _____

3 (5, 1) and (10, 2)
Rate of change = _____
Initial value = _____

4 (0, 5) and (8, 5)
Rate of change = _____
Initial value = _____

5 (1, 6) and (6, 16)
Rate of change = _____
Initial value = _____

6 (8, 30) and (5, 21)
Rate of change = _____
Initial value = _____

7 (1, 3) and (3, 1)
Rate of change = _____
Initial value = _____

8 (4, 7) and (12, 9)
Rate of change = _____
Initial value = _____

9 (3, 11) and (5, 11)
Rate of change = _____
Initial value = _____

10 (8, 4) and (4, 6)
Rate of change = _____
Initial value = _____

11 (6, 16) and (9, 17)
Rate of change = _____
Initial value = _____

12 (6, 8) and (15, 2)
Rate of change = _____
Initial value = _____

Give the rate of change and the initial value from each description.

13 Kahn starts a savings account with $14. He will put in an equal amount each week. After 7 weeks, he will have $56.
Rate of change per week = _____
Initial value = _____

14 Addison has some puzzle books. She will buy 7 new puzzle of books each year. She will have 43 puzzle books in 5 years.
Rate of change per year = _____
Initial value = _____

Linear Functions—Skills Practice

Name: _____

Identify another point on the line given one point and the slope.   **Form A**

1 (−4, 0) and slope = −2

2 (−5, 2) and slope = −1

3 (4, 5) and slope = 0

4 (−3, −2) and slope = 5

5 (5, 6) and slope = 1

6 (0, 0) and slope = 3

7 (−1, −1) and slope = $-\frac{1}{2}$

8 (1, 1) and slope = −4

9 (−2, −2) and slope = $\frac{1}{4}$

10 (0, −2) and slope = −5

11 (1, 2) and slope = $-\frac{1}{3}$

12 (3, −6) and slope = 4

13 (2, −3) and slope = 0

14 (4, 4) and slope = −3

15 (3, 5) and slope = $-\frac{3}{5}$

16 (2, 7) and slope = 1

17 (3, −3) and slope = −6

18 (2, 2) and slope = 2

19 (−2, 1) and slope = $\frac{1}{6}$

20 (4, 2) and slope = −2

21 (0, 0) and slope = $\frac{2}{3}$

22 (2, 4) and slope = −1

23 (1, −1) and slope = 3

24 (−1, 1) and slope = 8

Linear Functions—Skills Practice

Name: _____

Identify another point on the line given one point and the slope. **Form B**

1 (6, 7) and slope = 0

2 (−4, −5) and slope = 5

3 (−4, 3) and slope = −1

4 (−6, 0) and slope = −2

5 (3, 11) and slope = 1

6 (0, 0) and slope = $\frac{1}{4}$

7 (−1, −1) and slope = $-\frac{3}{5}$

8 (1, 2) and slope = $-\frac{1}{2}$

9 (0, −3) and slope = −5

10 (4, −8) and slope = 3

11 (4, −9) and slope = 0

12 (−3, 3) and slope = $-\frac{1}{3}$

13 (5, 5) and slope = −2

14 (5, −5) and slope = −6

15 (8, 9) and slope = 1

16 (−2, 3) and slope = $\frac{2}{3}$

17 (3, 4) and slope = −4

18 (−3, 1) and slope = $\frac{1}{6}$

19 (1, 1) and slope = −3

20 (0, 0) and slope = 4

21 (−1, 1) and slope = 2

22 (8, 8) and slope = 8

23 (1, −1) and slope = −1

24 (6, 2) and slope = 3