Term1 Review

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Mathematics 9
Term 1 Review

A. Things to Know

1) Rational Numbers
   - Add, Subtract, Multiply, Divide, Order of Ops, Word Problems, Squares Roots

2) Exponents
   - 6 Exponent Laws, Order of Ops, Substitution

B. Rational Numbers

1. Solve the following.

a) $-\frac{1}{2}+\frac{1}{6}$

$-\frac{3}{6}+\frac{1}{6}$

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

b) $\left(1\frac{3}{4}\right)-\left(4\frac{5}{8}\right)$

$\frac{14}{8}+\frac{-37}{8}$

$= \boxed{-\frac{23}{8} \text{ or } -2\frac{7}{8}}$

c) $\left(-\frac{1}{4}\right)\times\left(-\frac{2}{3}\right)$

$= \boxed{\frac{1}{6}}$

d) $\left(-2\frac{1}{3}\right)\div\left(-\frac{9}{12}\right)$

$-\frac{7}{3} \times -\frac{12}{9}$

$= \boxed{\frac{28}{9} \text{ or } 3\frac{1}{9}}$

KFC

e) $\left(1\frac{1}{2}\times\frac{2}{5}\right)+\left(-1\frac{1}{4}\div\frac{1}{2}\right)$

BEDMAS

$\left(\frac{3}{2}\times\frac{2}{5}\right)+\left(-\frac{5}{4}\times\frac{2}{1}\right)$

$\frac{3}{5}+\frac{-5}{2}$

$\frac{6}{10}+\frac{-25}{10} = \boxed{-\frac{19}{10} \text{ or } -1\frac{9}{10}}$

2. Solve $\sqrt{2\frac{7}{9}}$ $= \sqrt{\frac{25}{9}} = \frac{\sqrt{25}}{\sqrt{9}} = \boxed{\frac{5}{3} \text{ or } 1\frac{2}{3}}$

C. Exponents

1. Evaluate the following.

a) $(-3)^2$

$(-3)(-3)$

$= \boxed{9}$

b) -7^0

$\boxed{-1}$

c) $2^{-3} \times 2 \times 2^7$

$= 2^{-3+1+7}$

$= 2^5$

$= \boxed{32}$

d) $(2^3)^2$

$= 2^{3 \cdot 2}$

$= 2^6$

$= \boxed{64}$

e) 6^{-2}

$= \frac{1}{6^2}$

$= \boxed{\frac{1}{36}}$

f) $\frac{3^2}{3^{-1}}$

$= 3^{2--1}$

$= 3^3$

$= \boxed{27}$

2. Simplify the following.

a) $(2x^2y^3)(5xy^{-1})$

$= 10x^{2+1}y^{3+-1}$

$= \boxed{10x^3y^2}$

b) $\frac{8x^2y^{-1}}{4x^5y^{-3}}$

$= 2x^{2-5}y^{-1--3}$

$= 2x^{-3}y^2 = \boxed{\frac{2y^2}{x^3}}$

c) $(2x^2)^2(3x^{-1})^2$

$= (2^2x^{2\cdot2})(3^2x^{-1\cdot2})$

$= (4x^4)(9x^{-2})$

$= 36x^{4+-2}$

$= \boxed{36x^2}$

3. Solve the following if $x = 2$ and $y = -3$

a) $(x^{-2}y^3)(x^{-1}y^{-1}) = x^{-2+-1}y^{3+-1}$

$= x^{-3}y^2 = \frac{y^2}{x^3}$

$= \frac{(-3)^2}{(2)^3} = \boxed{\frac{9}{8} \text{ or } 1\frac{1}{8}}$

b) $(2x^{-1}y^2)^{-2} = 2^{-2}x^{-1\cdot-2}y^{2\cdot-2}$

$= 2^{-2}x^2y^{-4} = \frac{x^2}{2^2y^4} = \frac{x^2}{4y^4}$

$= \frac{(2)^2}{4(-3)^4} = \frac{4}{4(81)} = \frac{4\div4}{324\div4} = \boxed{\frac{1}{81}}$

Assignment : Term 1 Review Assignment

Name:_____

Term 1 Review Assignment

Solve the following.

1. $\frac{3}{9}+\frac{8}{27}$

2. $\frac{1}{5}-\left(-\frac{4}{7}\right)$

3. $\left(-4\frac{1}{2}\right)-1\frac{1}{3}$

4. $4\frac{1}{2}+\left(-\frac{5}{6}\right)$

5. $\left(\frac{-4}{-6}\right)\times\left(\frac{-9}{10}\right)$

6. $\left(-\frac{7}{27}\right)\div\left(\frac{14}{-15}\right)$

7. $\left(-3\frac{1}{5}\right)\times 2\frac{1}{4}$

8. $\left(-5\frac{1}{2}\right)\div\left(-2\frac{5}{6}\right)$

9. $\frac{-1}{8} \div \frac{1}{2} + \frac{1}{4} \times \frac{2}{3}$

10. $\left(-1\frac{1}{4} + \frac{1}{2}\right) - \left(\frac{1}{4} \times 1\frac{1}{3}\right)$

11. $\sqrt{\frac{144}{81}}$

12. $\sqrt{\frac{3}{8} \div \frac{8}{12}}$

Evaluate the following.

13. $(-2)^3 \times (-2)^3$

14. $\left(3^{-1}\right)^3$

15. $-(3)^2(3)(3)^{-4}$

16. $\left(\frac{2^3}{3}\right)^{-2}$

17. $\frac{6^5}{6^5}$

18. $\frac{8^3 \times 8 \times 8^{-5}}{8^{-2} \times 8^{-1}}$

Simplify the following.

19. $\left(a^2b\right)\left(a^4b^2\right)$

20. $\frac{x^{-3}}{x^{-7}}$

21. $\frac{x^4y}{x^2y^{-5}}$

22. $\left(3m^{-1}n\right)^2$

23. $\frac{6x^2y^{-2}}{8x^4y^{-4}}$

24. $\frac{\left(m^2n\right)\left(m^3n\right)}{\left(m^{-1}n\right)^2}$

Evaluate following if $x=2$ and $y=3$.

25. $\left(3x^2y^{-1}\right)\left(2xy^{-1}\right)$

26. $\frac{12xy^{-1}}{18x^{-2}y}$

Answers

1) $\frac{17}{27}$ 2) $\frac{27}{35}$ 3) $-\frac{35}{6}$ 4) $\frac{11}{3}$

5) $-\frac{3}{5}$ 6) $\frac{5}{18}$ 7) $-\frac{63}{8}$ 8) $\frac{33}{17}$

9) $-\frac{1}{12}$ 10) $-\frac{13}{12}$ 11) $\frac{4}{3}$ 12) $\frac{3}{4}$

13) 64 14) $\frac{1}{27}$ 15) $-\frac{1}{3}$ 16) $\frac{9}{64}$

17) 1 18) 64 19) a^6b^3 20) x^4

21) x^2y^6 22) $\frac{9n^2}{m^2}$ 23) $\frac{3y^2}{4x^2}$ 24) m^7

25) $\frac{16}{3}$ 26) $\frac{16}{27}$