Mid-Year Exam 2020 Review Package

Integers

1. $14 - (-2) =$

2. $-7(-8) =$

3. $0 \div 14 =$

4. $-5 + (-6) =$

5. $-2(-11)(+3) =$

6. $-83 \div 0 =$

7. $-11 - 8 + 2 =$

8. $-169 \div (-13) =$

9. $-26 - (+13) =$

10. $-43 - 2[11 - 3(5)] =$

11. $-400 \div (+20)$

12. $-26 \div (-13) =$

Rational Numbers/Decimals

1. $-2.3 + (-1.8) =$

2. $-2.1 \times (+3.2) =$

3. $\frac{0}{2.3} =$

4. $4.82 - (-1.3) =$

5. $8.6 \div 0.9 =$

6. $1.2 \div 0 =$

7. $5.3 - 11.36 =$

8. $-2.4(-1.5) =$

9. $-4.36 + 1.2[2.8 + (-3.51)] =$

10. $-2.1 + (-1.35) =$

11. $-0.55 \div (-0.66) =$

12$(4.51 - 5.32)(5.17 - 6.57) =$

13. Arrange the following numbers in ascending order: $0.123,\ -1.2,\ 1.35,\ 1.335\ ,\ 1.\overline{3},\ -1.32,\ 1.\overline{35}$

14. A submarine descends at a rate of 10.5 m/min. Express the depth below the surface after 4.2 minutes.

Rational Numbers/Fractions

1. $\frac{3}{10} + \frac{1}{5} =$

2. $2\frac{1}{3} + (-1\frac{1}{4}) =$

3. $1\frac{2}{5} - \frac{3}{6} =$

4. $-\frac{5}{12} - \frac{5}{6} =$

5. $\frac{3}{8} - \left(-\frac{1}{4}\right) + \frac{1}{2} =$

6. $\frac{4}{5} \times \frac{-10}{8} \times \frac{-16}{8} =$

7. $\frac{-14}{12} + \frac{-18}{-21} \times \frac{-4}{-2} =$

8. $\frac{1}{10} \div \frac{-3}{8} \div 2 =$

9. $\frac{3}{4} \div \frac{5}{8} - \frac{3}{8} \div \frac{1}{2} =$

10. $1\frac{1}{2} + 1\frac{1}{2}(-2\frac{5}{6} + \frac{1}{3}) =$

11. Circle all rational numbers in the line.

$\sqrt[3]{8}$ $-\sqrt{4}$ $\frac{3}{4}$ $-\frac{1}{5}$ 0 1 -5 $\sqrt[3]{17}$ $\sqrt{0.09}$ $\sqrt{0.016}$ $-\sqrt[3]{0.001}$ $\sqrt{-4}$

Square roots/ Cubic Roots/The Pythagorean Theorem

Calculate:

1. $\sqrt{16} + \sqrt{25} =$

2. $\sqrt{100 - 64} =$

3. $\sqrt{0} =$

4. $\sqrt{169} + \sqrt{121} =$

5. $\sqrt{12100} =$

6. $\sqrt{1} =$

7. $\sqrt{16 + 25} =$

8. $\sqrt{0.49} =$

9. $\sqrt{-9} =$

10. $\sqrt{8^2} =$

11. $(\sqrt{15})^2 - \left(\sqrt{11}\right)^2 =$

12.$\sqrt[3]{27} - \sqrt[3]{125} =$

Estimate to one decimal place:

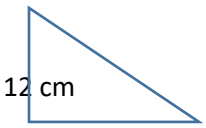
13. $\sqrt{15} =$

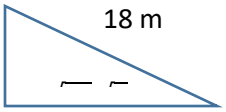
14. $\sqrt{111} =$

15. $\sqrt{85} =$

Mid-Year Exam 2020 Review Package

16. Calculate the perimeter and the area of the following right angle triangles:





Powers and Exponents:

1. Write all exponent laws and one example for each rule.

Evaluate:

2. $-3^0 =$

3. $(2+3)^0 =$

4. $(2-3)^{100} =$

5. $-(-1)^{50} - (-1)^{51} =$

6. $-1^0 - 2^0 =$

7. $(-3)^3 =$

Use $<$, $>$ or = to write a true statement.

8. $(-3)^5$ ___ -3^5

9. $\left(-\frac{3}{4}\right)^2$ ___ $\left(-\frac{3}{4}\right)^4$

10. 2^5 ___ 5^2

11. $\left(-\frac{7}{9}\right)^5$ ___ $\left(-\frac{7}{9}\right)^7$

Evaluate:

12. $4 - 3 \times 2^2 =$

13. $(4-3) \times 2^2 =$

14. $-2 \times 3^2 - 4 \times 2^2 =$

15. $\frac{8+2\times3}{(8-2)\times3} =$

16. $-2 \times (3^2 - 4) \times 2^2 =$

17. $(3^2 - 4)^0 \times (-2^0) =$

Insert brackets to make the expression true.

18. $-4 + 1^2 + 2 - 3^3 = 8$

19. $3 + 2 \times 3 - 1^2 = 11$

Simplify. Leave answer in exponential form or evaluate, if possible.

20. $3^4 \times 2^3 \times 3^2 \times 2 =$

21. $(-3)^4 \times 3^2 =$

22. $(-4)^9 \div (-4)^7 + (-4)(-4)^2 =$

23. $\frac{4^3 \times 4^5}{4^4} =$

24. $\frac{(-2)^5 \times 2^2}{(-2)^2} =$

25. $[(-3)^4]^2 \times 3^2 =$

26. $[(-2)^3]^5 =$

27. $-4^2 + 2 \times (-3)^2 - 1^2 =$

28. $\frac{[(-\mathbf{14})^2]^3}{[-\mathbf{14}^2]^3} =$

29. $(\mathbf{1}+\mathbf{2})^2 - (\mathbf{5}-\mathbf{2})^3 =$

30. How much money are you going to get on January 31st, if you get 1 cent on Jan 1st and 2 cents on the Jan 2nd , 4 cents on Jan 3rd, etc. **?**

Mid-Year Exam 2020 Review Package

Polynomials

Complete the table:

	Name	Degree	Coefficients	Constant	Variable(s)
$-0.5x^3 - 4x + 5$					
$35x^3y^2 + 5x^5y$					
$-0.5a^4 - 12b + \sqrt{2}$					

Simplify:

1. $4x^2 - 2x - 15 - 9x^2 + 8x - 2 =$

2. $14x^2 - 4x - 25 + (5x^2 + 7x - 12) =$

3. $-2x^2 + 3x - 9 - (-9x^2 + 28x - 32) =$

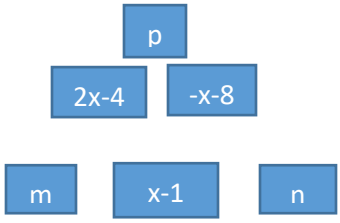
4. $2(4x^2 - 2x) - 5x(x^2 - x + 2) =$

5. $4x^2(1 - 9x^2 + 8x) - \frac{2}{3}(x^4 - 3x + 6) =$

6. $\frac{2}{3}y^3 - 2y^2 + 3x - \frac{1}{2}y^2 - \frac{3}{2}x + \frac{-1}{5}y^2 =$

7. $\frac{2x(x^2-3x)}{-x} - \frac{2x+4}{2} =$

8. Complete the addition pyramid and determine m, n and p:



9. Tickets for a school concert are $15 for adults and $10 for students.

a) Write an expression that represents the total income for the school concert. Indicate what the variables represent.

b) What is the total income if 19 parents and 60 students attend the concert?

10. A company charges $80 per hour plus $ 50 for a service call. Let n be the number of hours an electrician works at your school.

a) Write an expression that represents the total amount you have to pay, depending on the number of hours, n.

b) How much do you have to pay for four hours of work?

c) The electrician brings three more apprentices who work at half the rate. Write a formula that indicated the amount of money you would pay the three of them is they work for n hours.

Mid-Year Exam 2020 Review Package

Patterns

1. Find the relationships between n and t. Then, determine the 20th number in the list.

n	1	2	3	4
t	5	7	9	11

2. Find the relationships between n and t. Then, determine the 50th number in the list.

n	1	2	3	4
t	-5	-3	-1	1

3. a) How many sides are in the 12th figure?

b) Which figure will have 43 sides?

4. The cost of renting a car is $60 plus 35 cents per kilometer travelled.

a) Write an equations relating cost C ($) to the numbers of km travelled.

b) Find the cost for travelling 100 km.

c) How many km can you travel for $150?