**REVIEW #1**

**COMMON CORE EXAM QUESTIONS**

**BASICS UNIT**

**PART I** (2 points)

1. An equation is given below.



The solution to the equation is

(1) 8.3 (3) 3

(2) 8.7 (4) -3

**PART I** (2 points)

2. Which value of *x* satisfies the equation ?

(1) -19.575 (3) -16.3125

(2) -18.825 (4) -15.6875

**PART II** (2 points)

3. When multiplying polynomials for a math assignment, Pat found the product to be . He then had to state the leading coefficient of this polynomial. Pat wrote down . Do you agree with Pat’s answer? Explain your reasoning.

**PART I** (2 points)

4. A part of Jennifer’s work to solve the equation  is shown below.



Which property justifies her first step?

(1) identity property of multiplication

(2) multiplication property of equality

(3) commutative property of multiplication

(4) distributive property of multiplication over subtraction

**PART II** (2 points)

5. Is the sum of  and  rational or irrational? Explain your answer.

**PART II** (2 points)

6. Jakob is working on his math homework. He decides that the sum of the expression  must be rational because it is a fraction. Is Jakob correct? Explain your reasoning.

**PART II** (2 points)

7. A teacher wrote the following set of numbers on the board:



Explain why  is irrational, but  is rational.

**PART II** (2 points)

8. The distance traveled is equal to the rate of speed multiplied by the time traveled. If the distance is measured in feet and the time is measured in minutes, then the rate of speed is expressed in which units? Explain how you arrived at your answer.

**PART I** (2 points)

9. A construction worker needs to move 120  of dirt by using a wheelbarrow. One wheelbarrow load holds 8  of dirt and each load takes him 10 minutes to complete. One correct way to figure out the number of hours he would need to complete this job is

(1) 

(2) 

(3) 

(4) 

**PART II** (2 points)

10. A typical marathon is 26.2 miles. Allan averages 12 kilometers per hour when running in marathons.

Determine how long it would take Allan to complete a marathon, to the *nearest tenth of an hour*. Justify your answer.

**UNIT 1**

**PART II** (2 points)

11. Express in simplest form: 

**PART I** (2 points)

12. Which expression is equivalent to ?

(1)  (3) 

(2)  (4) 

**PART II** (2 points)

13. Write the expression  as a polynomial in standard form.

**PART I** (2 points)

14. What is the product of  and ?

(1)  (3) 

(2)  (4) 

**PART II** (2 points)

15. The formula  calculates the gravitational force between two objects where *G* is the gravitational constant,  is the mass of one object,  is the mass of the other object, and *r* is the distance between them. Solve for the positive value of *r* in terms of , , , and .

**PART II** (2 points)

16. Using the formula for the volume of a cone, express *r* in terms of *V*, *h*, and .

**PART I** (2 points)

17. The formula for the surface area of a right rectangular prism is , where *l*, *w*, and *h* represent the length, width, and height, respectively. Which term of this formula is *not* dependent on the height?

(1) *A*  (3) *2hw*

(2) *2lw*  (4) *2lh*

**PART I** (2 points)

18. The distance a free falling object has traveled can be modeled by the equation , where *a* is acceleration due to gravity and *t* is the amount of time the object has fallen. What is *t* in terms of *a* and *d*?

(1)  (3) 

(2)  (4) 

**PART I** (2 points)

19. The formula for blood flow rate is given by , where *F* is the flow rate,  the initial pressure,  the final pressure, and *r* the resistance created by blood vessel size. Which formula can *not* be derived from the given formula?

(1)  (3) 

(2)  (4) 

**PART IV** (6 points)

20. Ian is borrowing $1000 from his parents to buy a notebook computer. He plans to pay them back at the rate of $60 per month. Ken is borrowing $600 from his parents to purchase a snowboard. He plans to pay his parents back at the rate of $20 per month.

Write an equation that can be used to determine after how many months the boys will owe the same amount.

Determine algebraically and state in how many months the two boys will owe the same amount. State the amount they will owe at this time.

Ian claims that he will have his loan paid off 6 months after he and Ken owe the same amount. Determine and state if Ian is correct. Explain your reasoning.

**PART IV** (6 points)

21. At Bea’s Pet Shop, the number of dogs, *d*, is initially five less than twice the number of cats, *c*. If she decides to add three more of each, the ratio of cats to dogs will be .

Write an equation or system of equations that can be used to find the number of cats and dogs Bea has in her pet shop.

Could Bea’s Pet Shop initially have 15 cats and 20 dogs? Explain your reasoning.

Determine algebraically the number of cats and the number of dogs Bea initially had in her pet shop.

**UNIT 2**

**PART I** (2 points)

22. The expression  is equivalent to

(1)  (3) 

(2)  (4) 

**PART I** (2 points)

23. When factored completely,  is

(1)  (3) 

(2)  (4) 

**PART I** (2 points)

24. Which expression is equivalent to ?

(1)  (3) 

(2)  (4) 

**PART I** (2 points)

25. Which expression is equivalent to ?

(1)  (3) 

(2)  (4) 