



Jakarta International  
School  
7<sup>th</sup> Grade

**Practice Test - Green**  
Factors, Fractions, and  
Exponents

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Score:

50

Clearly show required work. Check Carefully!

1. Is the first number divisible by the second? Explain how you know without doing the actual division problem. (2 points)

378 by 3?

487 by 2?

2. Find the missing digit that will make the number divisible by 9. Explain your method. (1 point)

3\_,817

If a number is divisible by 6, is it also divisible by 2? Explain (1 point)

3. There are 20 choral students singing at a school concert. Each row of singers must have the same number of students. If there are at least 5 students in each row, what are all the possible arrangements of singers? (1 point)
4. Explain what problem number three has to do with our study of factors. (2 points)
5. List the factors of 96 (1 point)

6. Write using exponents (2 points)

A. The product of  $x$  cubed and  $w$  squared.

B.  $-30 \cdot x \cdot x \cdot x \cdot 2 \cdot -1 \cdot -1 \cdot w \cdot w \cdot w \cdot w$

7. Evaluate the expression if  $a=3$ ,  $b=-4$ , and  $c=5$  (2 points)

$$\frac{[a-b+(-c^2)]}{c-b}$$

8. Simplify (2 points)

A.  $5 \cdot 10^6$

B.  $(-2)^5$

10. Use exponents to write the prime factorization of the following numbers: (2 points)

i) 500

ii) 240

11. Using the prime factorization of 500 and 240, find their greatest common factor (GCF). (1 point)

12. What is the GCF of  $12x^3yz^2$  and  $18y^3z^5$ ? (1 point)

13. Why is two the only even prime number? (1 point)

14. The Little Theater is getting set up for the Middle School musical. 72 seats at the front have been set up for students and 180 seats have been reserved for parents at the back. If all rows have the same number of chairs, what is the greatest number of chairs possible for a row? (2 points)

15. Find two fractions equivalent to  $\frac{8}{12}$ . (1 point)

16. Write in simplest form (3 points)

a)  $\frac{6m^2n}{18mn}$

b)  $\frac{7j}{28jk}$

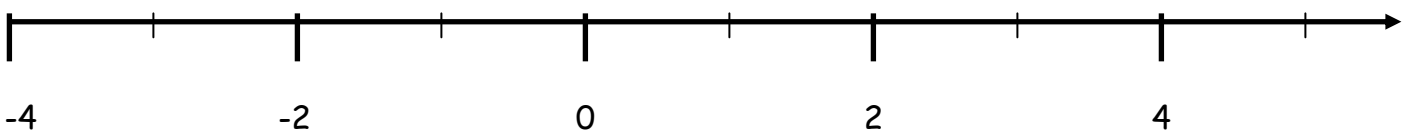
c)  $\frac{x^2y}{5yz}$

17. I spend 3 hours a day on a computer. What fraction of the day do I spend this way? Write your answer in simplest form. (1 point)

18. Write two expressions whose GCF is  $7b^2$  (1 point)

19. Graph each rational number as close as possible to their correct locations on the number line below. (3 points)

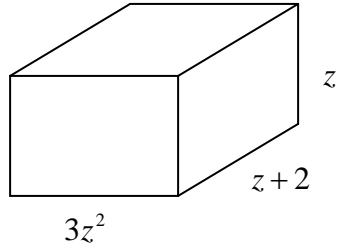
A) 3.5      B)  $-2\frac{1}{2}$       C)  $\frac{19}{20}$       D)  $3.\overline{66}$       E)  $-\frac{18}{6}$       F)  $\frac{47}{100}$



20. Evaluate. Write in simplest form. (1 point)

$$\frac{a(ab-4)}{10}, \text{ for } a = 5 \text{ and } b = 2$$

21. Write a simplified expression for the volume of the rectangular prism (2 points)



22. Simplify each expression. Show work that leaves no doubt that you fully understand why the answer is what it is. (4 points)

A.  $-5r^6 \cdot 4r^2 \cdot x$

B.  $10^4 \cdot 10^7$

C.  $(x^5)^3$

D.  $m^5 \cdot m^7$

23. Complete each equation. Show work that leaves no doubt that you fully understand why the answer is what it is. (2 points)

A.  $x^{\square} \cdot x^4 = x^8$

B.  $(y^7)^{\square} = y^{14}$

24. Simplify each side. Then, compare using  $<$ ,  $>$ , or  $=$ . Show work that leaves no doubt that you fully understand why the answer is what it is. (1 point)

$$(7^4 \cdot 7^2)^3 \square (7^2)^{12}$$

25. Simplify (1 point)

$$\frac{6x^7y^2}{8x^2y^5}$$

26. Complete the equation. (1 point)

$$\frac{y^{\square}}{y^9} = y^{-4}$$

27. First, write the expression without a fraction bar. Then, evaluate the expression. (1 point)

$$\frac{7}{10^2}$$

28. Write the number in scientific notation. (2 points)

A. The time it takes for light to travel one meter is .000000000334 seconds.

B. The distance from earth to the star Vega is 239,000,000,000,000 meters

30. Write the number in standard form. (2 points)

A. The cruising speed of a supersonic jet is  $1.336 \times 10^3$  miles per hour.

B. The thickness of the human retina is  $1.2 \times 10^{-4}$  meters

31. Solve. Write your result in scientific notation. (1 point)

The wolffia plant is the smallest plant in the world. One wolffia plant has a mass of about  $1.5 \times 10^{-4}$  gram.  $5 \times 10^3$  wolffia plants can fit in a thimble the sign of your thumb. What is the mass of that many wolffia plants?

Mysteries  
1 5 9 3 8

# The CD Collection Crisis

"This guy is furious, Lump!" Emma said. "He keeps telling us, 'I want my half! I want my half!'"

Then Will chimed in. "The others are furious, too. They're all furious," he said, "and all three of them are right here in our office being furious together. Today is one of those days I wish I'd had more homework. The office would've been closed."

Emma explained that Hoover and his friends, Amy and Amos, had shown up at the office with a doozy of a dilemma. Their mutual friend, Luis Ruiz, was leaving town. He was moving away but leaving a problem behind. The problem was in the form of a gift. Luis told his friends that he was going to give his valuable collection of CDs to them. The collection contained all the CDs made by Out of Sorts—their favorite singing group.

"Do you follow me so far, Lump?" Emma asked.

"Have you ever known me not to? So where's the problem—did Luis hide the CDs somewhere or lock them up and misplace the key?"

"If it were only that simple," Will interjected.

"There are 17 CDs in his collection. The difficult part is how he wants his friends to share the collection."

It seems that Luis wanted Hoover to have half of his collection, Amy to have one-third, and Amos was to get one-ninth.

As I digested the data, the dilemma became all too clear. How does one divide 17 CDs as Luis intended?

"You can't break up CDs, can you?" Emma questioned.

I could hear the exasperation in her voice. I could also hear her visitors, loudly and clearly, even though I held the telephone an arm's length from my ear.

"He said half for me, and I intend to get my half! And 8 is not half of 17!"

"Well, 5 isn't a third of it either!"

"There's no way I'm settling for 1 CD as my ninth! I want 2 CDs!"



While Will tried to calm down the three squabblers, Emma drifted away from the group. She spoke softly into her portable phone. “We tried to figure things every which way using our calculators. Then we tried to get these three to cooperate and divide up the goods in some fair way. Nothing doing. We even called Luis, but he was firm about his wishes. We’ve hit a roadblock on this one, Lump. Any suggestions?”

I began to tap my pencil on the desk, as is my annoying habit when I do big brain work. Before I hit the desk with my second tap, I hit on a suggestion.

“Emma, why don’t you put Will on the phone, so he can hear this, too.” I waited for Will to join us. The ruckus was still going full steam ahead in the background.

“I’m not taking one CD less than half the collection! Half the collection!”

“I love Out of Sorts! I demand my third! I won’t take less than one third!”

“Don’t you dare forget about my ninth! It’s only a ninth, but it’s my ninth and I want it!”

When I had Emma and Will on the phone again, I started in with the wisdom. “You two have got to change your point of view on this. To solve this mystery, you need to look at the situation from a new perspective.”

“A new perspective. OK.” I could hear Emma rolling her eyes.

“Change our point of view. Well, all right.” I could also hear Will bunching his eyebrows together.

I could tell I wasn’t getting through. With a big sigh, I asked Emma and Will if they had any Out of Sorts CDs in the office. They did. “Then use your collection,” I told them. “Be good and generous hosts to your ‘guests.’ You can solve this CD-gift dilemma in two shakes.”

There was silence on the line. Their brains were spinning to make sense of my hint. Then I faintly sensed one light bulb going on, then another. I think they heard me loud and clear.

“We hear you loud and clear, Lump,” Will yelled. “This thing is all but solved.”

“Thanks a million,” Emma added. “I think we’re ready to adjust Luis’s collection so that it can be divided as he requested.”

Emma and Will may not know what “two shakes” means, but they know about factors and multiples. In five minutes, the three formerly bickering buddies were on their way. All three were a little puzzled, but they were satisfied. As for our two detectives, they didn’t take advantage of the opportunity that presented itself—to swap one of their Out of Sorts CDs for one in Luis’s collection that they hadn’t heard. Out of Sorts wasn’t their favorite music group.



How did Emma and Will use Lump’s advice to solve the CD collection crisis?

