T E O R Í A D E N Ú M E R O S

1. Clasifica los siguientes números en primos y compuestos: 21, 77, 91, 111, 731, 10, 23, 101, 127 y 2323.
2. Con la criba de Eratóstenes encuentra los números primos menores que 100.
3. Factoriza los siguientes números: 120, 2700, 2100, 21560, 29250, 84084, 3000, 900, 235, 470, 144, 360.
4. Calcula el mcm y MCD de las siguientes parejas de números: (235, 470), (144, 360), (900, 3000), (2100, 21560), (29250, 84084).
5. Comprueba las conjeturas de Goldbach para los siguientes números: 12, 21, 24, 25, 30, 33, 44, 45, 50.

N Ú M E R O S R A C I O N A L E S .

1. $\frac{7}{6}-\left(\frac{5}{6}-\frac{1}{6}\right)=$
2. $\left(\frac{77}{2}-\left(4-\frac{7}{3}\right)\right)-\frac{1}{2}=$
3. $\frac{11}{12}\cdot\frac{6}{55}=$
4. $\frac{8}{15}\div\frac{4}{5}=$
5. $\left(2-\frac{1}{2}\right)\cdot\left(3-\frac{1}{3}\right)\cdot\left(4-\frac{1}{4}\right)=$
6. $\left(\frac{1}{2}+\frac{1}{3}\right)\cdot\left(\frac{1}{3}+\frac{1}{4}\right)\cdot\left(\frac{1}{4}+\frac{1}{5}\right)=$
7. $\left(\frac{4}{5}\cdot\frac{2}{3}\right)\div\frac{5}{8}=$
8. $\left(\frac{5}{2}-\frac{3}{4}\right)\div\frac{5}{2}=$
9. $\frac{2}{3}-\left(\frac{1}{2}-\frac{1}{3}\right)+\left(\frac{3}{2}-\frac{1}{6}\right)=$
10. $\dfrac{-1+\frac{1}{2}\cdot\left(-\frac{4}{3}\right)}{\frac{1}{3}-\frac{2}{3}\div 7}=$
11. $\dfrac{\frac{5}{2}}{\frac{2}{3}}=$
12. $\dfrac{\frac{5}{2}}{\frac{2}{3}}=$
13. $\frac{4}{5}\div\left[\left(\frac{5}{8}-\frac{1}{3}\right)\cdot 12\right]=$
14. $\frac{2}{3}-\left(\frac{1}{2}-\frac{1}{3}\right)+\left(\frac{3}{2}-\frac{1}{6}\right)=$
15. $\dfrac{\frac{-8}{21}}{\frac{-72}{49}}=$
16. $\left[\left(-\frac{2}{5}\right)\div(-4)\right]\cdot\left[\left(\frac{5}{-3}\right)\div\left(\frac{1}{-6}\right)\right]=$
17. $\left(\frac{1}{3}\div\frac{4}{7}-\frac{1}{6}+3\div 18\right)\cdot\left(45\div\frac{1}{5}-\frac{1}{3}\div\frac{1}{100}\right)=$
18. $\dfrac{\frac{3}{4}+\frac{1}{6}}{\frac{3}{4}-\frac{1}{6}}=$
19. $\dfrac{\frac{3}{5}-\frac{1}{4}}{\frac{4}{3}\div\frac{2}{9}-\frac{9}{7}}=$
20. $\left[\left(-\frac{2}{5}\right)\div(-4)\right]\cdot\left[\left(\frac{5}{-3}\right)\div\left(\frac{1}{-6}\right)\right]=$

P O T E N C I A S

1. $\left[\left(-\frac{3}{5}\right)^{-3}\cdot\left(\frac{3}{5}\right)\right]^{-2}=$

2. $\left[\left(\frac{2}{3}\right)^{2}\cdot\left(\frac{1}{2}\right)^{2}\right]^{-3}-(3^3)^2=$

3. $\left[\left(\frac{5}{7}\right)^{2}-\frac{4}{7^2}\right]^{-2}\cdot\left[\left(\frac{5}{7}\right)^{2}+\frac{3}{7^2}\right]^{2}=$

4. $\left[\left[\left(\frac{1}{5}\right)^{2}\right]^{-3}\div\left(\frac{5}{2}\right)^{6}\right]^{-1}=$

5. $\left[\frac{2}{5}\cdot\frac{1}{3}\left(\frac{21}{6}+\frac{3}{2}\right)\right]^{5}\div\left[\frac{1}{3}+\frac{2}{3}\left(\frac{1}{3}+\frac{1}{6}\right)\right]^{5}=$

6. $\left[\frac{1}{2}+\left(\frac{2}{3}\right)^{-1}\right]^{5}\cdot\left(\frac{1}{\frac{5}{2}-1}\right)^{5}\cdot\left(1-\frac{1}{4}\right)^{5}=$

7. $\dfrac{6^4\cdot 3^{-2}\cdot 7^{-3}}{14^{-3}\cdot 3^2\cdot 10^7}$

8. $\dfrac{21^5\cdot 5^{-7}\cdot 15^2\cdot 3^4}{2^{-8}\cdot 36^2}$

9. $\dfrac{(4\cdot 3^2\cdot 6^{-2})^2\cdot(2^3\cdot 3^4)^{-1}}{(2^6\cdot 3^7)^{-3}\cdot(6^4)^3}$

10. $\dfrac{x^7\cdot y^5\cdot z^6}{(x^3\cdot y^2)^2\cdot z^5}$

11. $\dfrac{a^4\cdot b^3\cdot c^{-2}}{(a^2\cdot b)^3\cdot c^3}$

12. $\left(\frac{m^4}{n^3}\right)^2\cdot\frac{n^7}{p^5}\div\left(\frac{m^3}{p^3}\right)^2$

13. $\left(\frac{u^2}{v\cdot w^2}\right)^3 \div \frac{v^3}{(u^3\cdot w^3)^2}$

14. $\frac{a^{-4}\cdot(6^2)^{-1}\cdot b^2}{2^3 3^2\cdot a^6\cdot b^{-7}}$

15. $\frac{10^3\cdot a^{-2}\cdot b^3\cdot c^5}{2^4\cdot 5^2\cdot a^{-3}\cdot b\cdot c^3}$

16. $\frac{\left(\frac{2}{3}\right)^3\cdot\left(\frac{2}{3}\right)^7}{\left(\frac{2}{3}\right)^6}$

17. $\frac{2^3\cdot a^2\cdot b^{-3}\cdot(6ab)^{-5}}{(2a^2b)^2\cdot(3a)^{-3}}$

RADICALES

1. $\frac{\sqrt[3]{-3}}{\sqrt[3]{24}}$

2. $\sqrt[3]{a^2\cdot\sqrt[4]{a^3}}$

3. $\left(a\sqrt[6]{a^2}\right)^2 \div \sqrt{\sqrt[3]{a}}$

4. $\left(\sqrt[3]{\sqrt{3}\cdot\sqrt[3]{2}}\right)^2$

5. $\frac{\sqrt[4]{3}\cdot\sqrt{2}}{\sqrt[8]{12}}$

6. $\sqrt[3]{-30+\sqrt{11-\sqrt[4]{16}}}$

7. $\left(\frac{(3\sqrt{2})^2+2\sqrt{3^3}}{\sqrt[3]{6^3}}\right)^2$

8. $\frac{\sqrt{3^3\cdot 5^4}\cdot\sqrt[3]{2^3\cdot 3}}{\sqrt[6]{3^5}}$

9. $\frac{3^{-\frac{3}{4}}\cdot 9^{\frac{3}{2}}}{(\sqrt{3})^{-3}\cdot\sqrt{81}}$

10. $\sqrt{2}\cdot\sqrt{\sqrt[3]{2}} \div \sqrt{\sqrt[3]{2}}$

11. $\frac{\sqrt[4]{a^3\cdot b^5\cdot c}}{\sqrt{a\cdot b^3\cdot c^3}}$

12. $\sqrt{a\cdot b}\cdot\sqrt[3]{a^2\cdot b^2}\cdot\sqrt[4]{a\cdot b^3}$

13. $a\sqrt{2}\cdot 2\sqrt{a}\cdot a\sqrt[3]{2}\cdot 2\sqrt[3]{a}\cdot a\sqrt[6]{2}\cdot 2\sqrt[6]{a}$

14. $\frac{4}{5}\sqrt{\frac{6m^3}{2n}}\cdot\frac{1}{2}\sqrt{\frac{3n^3}{8m}}\cdot\frac{5}{6}\sqrt{\frac{2m^4n^3}{4m^3n}}$

15. $\left(3\sqrt[4]{4a^2b^3}\cdot\sqrt{2ab}\right)^3$

16. $\left(\sqrt[3]{\sqrt[7]{\sqrt{a^2b^3}}}\right)^8$

17. $\left(\sqrt{\left(\frac{\sqrt{m}}{\sqrt[4]{n}}\right)^2\cdot\sqrt[5]{\frac{m^4}{\sqrt{n}}}}\right)^3$

18. $\frac{\sqrt[3]{a^{\frac{5}{7}}}\cdot\sqrt{a}}{\sqrt[5]{a^{\frac{2}{3}}}\cdot\sqrt[4]{a^{\frac{2}{5}}}}$

RACIONALIZA:

1. $\frac{4}{\sqrt{5}}$

2. $\frac{4}{2\sqrt{3}}$

3. $\frac{4-\sqrt{2}}{3\sqrt{2}}$

4. $\frac{6}{\sqrt{2}-1}$

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

6. $\frac{3}{\sqrt{3}+\sqrt{2}}$

7. $\frac{4}{\sqrt[3]{2}}$

8. $\frac{a}{\sqrt{b}}$

9. $\frac{2}{a+\sqrt{b}}$