**3º de ESO. Ejercicios de fracciones y potencias. Octubre de 2016**

**Realizar paso a paso simplificando tan pronto como sea posible**

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| 1 | $$\frac{3}{49}+\frac{2}{7}-\frac{5}{14}=\frac{3}{7^{2}}+\frac{2}{7}-\frac{5}{7∙2}=\frac{3∙2+2∙2∙7-5∙7}{7^{2}∙2}=\frac{6+28-35}{7^{2}∙2}=\frac{-1}{7^{2}∙2}$$ |
| 2 | $$\left(\frac{12}{125}+\frac{2}{25}\right):\frac{11}{15}=\frac{12+10}{125}:\frac{11}{15}=\frac{22∙15}{125∙11}=\frac{11∙2∙3∙5}{5^{3}∙11}=\frac{6}{25}$$ |
| 3 | $$\left(\frac{3}{4}-\frac{1}{6}\right):\left(2-\frac{23}{15}\right)=\frac{9-2}{12}:\frac{30-23}{15}=\frac{7∙15}{12∙7}=\frac{15}{12}=\frac{5}{4}$$ |
| 4 | $$\frac{18}{5}:\left(\frac{7}{5}∙\frac{3}{14}+\frac{3}{20}\right)=\frac{18}{5}:\left(\frac{7∙3}{5∙2∙7}+\frac{3}{20}\right)=\frac{18}{5}:\left(\frac{3}{10}+\frac{3}{20}\right)=\frac{18}{5}:\frac{9}{20}=\frac{9∙2∙5∙4}{5∙9}=8$$ |
| 5 | $$\frac{5}{36}+\frac{34}{33}∙\frac{22}{51}=\frac{5}{36}+∙\frac{2∙17∙2∙11}{3∙11∙3∙17}=\frac{5}{36}+\frac{4}{9}=\frac{5+16}{36}=\frac{21}{36}=\frac{7}{12}$$ |

**Simplifica las siguientes expresiones utilizando las propiedades de las potencias.**

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| 1 | $$\frac{8^{-2}∙512}{4^{3}}=\frac{\left(2^{3}\right)^{-2}∙2^{9}}{\left(2^{2}\right)^{3}}=2^{-6+9-6}=$$$$=2^{-3}=\frac{1}{2^{3}}$$ | 2 | $$\left(\frac{2}{5}\right)^{7}:\left[5^{3}∙2^{4}\right]=\frac{2^{7}}{5^{7}∙5^{3}∙2^{4}}=\frac{2^{3}}{5^{10}}=$$$$=2$$ |
| 3 | $$\left(\frac{2}{3}\right)^{5}∙\left(\frac{3}{2}\right)^{-2}=\left(\frac{2}{3}\right)^{5}∙\left(\frac{2}{3}\right)^{2}=\left(\frac{2}{3}\right)^{7}$$ | 4 | $$\left(\frac{1}{3}\right)^{3}∙81^{-3}=3^{-3}∙\left(3^{4}\right)^{-3}=3^{-3-12}=$$$$=3^{-15}=\frac{1}{3^{15}}$$ |
| 5 | $$\left(\frac{1}{125}\right)∙25^{7}=5^{-3}\left(5^{2}\right)^{7}=5^{-3+14}=$$$$=5^{11}$$ | 6 | $$\frac{27∙3^{-8}}{243}=3^{3-8-5}=3^{-10}=\frac{1}{3^{10}}$$ |
| 7 | $$\frac{121}{11^{-5}}∙\left(\frac{1}{11}\right)^{3}=11^{2-(-5)}∙11^{-3}=11^{4}$$ | 8 | $$\frac{6^{2}∙243}{2^{5}∙3^{4}}=\frac{\left(2∙3\right)^{2}∙3}{2^{5}∙3^{4}}^{5}=2^{-3}∙3^{3}=$$$$=\left(\frac{3}{2}\right)^{3}$$ |