MATEMÁTICAS -- 3º ESO -- IES LOS PACOS

Worksheet 1 **5-10-2015**

Name: ……

1. Calculate:

a) $5\cdot[8-(2+3)]-(-4)\cdot[6-(2+7)]$

b) $(-7)\cdot[4\cdot(3-8)-5\cdot(8-5)]$

c) $-3\cdot(4-2)-4\cdot(3-8)-[4\cdot(-5)]\cdot[(-3)\cdot 11]$

d) $[(1-4)-(5-3)-(-6)]\cdot[-3+(-7)]$

e) $\left[(1-7)-(8-3)-(-2)^5\right]\cdot[15+(-11)]^2$

f) $4:(2-3)^7+5\cdot(-1)^2-3^2\cdot 4$

g) $(2\cdot 3)^2:(-1-5)+3\cdot(5-2)^0$

h) $6\cdot(-1)+5\cdot(-2)^2-2\cdot(-5+4)^6$

2. Write the missing numbers:

a) $\frac{x}{28}=\frac{3}{2}$ b) $\frac{-12}{5}=\frac{x}{15}$ c) $\frac{72}{x}=\frac{30}{35}$ d) $\frac{2}{7}=\frac{4}{x}$

3. Look for pairs of equivalents fractions. Show your working:

$$\frac{4}{3},\frac{5}{7},\frac{8}{3},\frac{2}{11},\frac{6}{9},\frac{16}{6},\frac{15}{21},\frac{4}{22},\frac{2}{3},\frac{12}{9}$$

4. Cancel these fractions to their simplest form (Simplify):

a) $\frac{24}{36}$ b) $\frac{84}{240}$ c) $\frac{75}{55}$ d) $\frac{50}{120}$

5. Write each set of fractions in descending order:

a) $\frac{3}{5},-\frac{3}{10},\frac{3}{4},-\frac{1}{5},-\frac{3}{2}$

b) $\frac{2}{3},-\frac{1}{6},\frac{5}{12},\frac{1}{9}$

6. Calculate and simplify:

a) $3\cdot\left(\frac{2}{7}-\frac{1}{7}\right)+2:\frac{5}{7}$

b) $\frac{2}{3}\cdot\left(\frac{3}{5}-\frac{1}{3}\right)+\frac{7}{5}\cdot\frac{1}{3}$

c) $\dfrac{\frac{1}{2}\cdot 3-\frac{1}{4}}{3\cdot\left(\frac{1}{2}-2\right)}$

d) $\dfrac{1+\frac{1}{2}-\frac{1}{8}}{3+\frac{1}{7}}$

e) $\left(\frac{3}{5}+\frac{1}{3}\right)-\left[1-\left(\frac{3}{4}-\frac{1}{2}\right)+\frac{2}{3}-\frac{3}{20}\right]$

f) $\left(\frac{11}{3}-\frac{7}{2}\right)^2\cdot\left(2\cdot\frac{5}{3}-\frac{16}{9}\right)^{-1}$

7. Michael is 160 cm tall and his brother Peter is 7/8 as tall as him. How tall is Peter?

8. Last year, my mother weighed 63 kg. This year she weighs 2/7 more. How much does my mother weigh this year?

9. McDonalds sell milkshakes in two sizes. A small milkshake contains 300ml and a large milkshake contains 2/3 more.
   a) How much does a large milkshake contain?
   b) If Anna drinks 2/3 of a small milkshake and Martha 1/2 of a large milkshake who drinks the most?

10. A teacher has marked 2/7 of his exams with a red marker and 1/4 with a blue one. If he still has 52 exams to mark, how many exams did he start with?

11. A boy had 90 comics. He gave two fifths to his father and 2/15 to a friend. How many comics did he have left?

12. Three friends bought a present. The first one gave 2/7 of the total; the second one paid 3/5 of the remainder and the third one had to pay 40 euros. How much was the present and how much did each friend pay?

13. Of the people invited to the party, ¼ could not come because of illness and 2/5 could not come because of transport problems. What fraction of those invited could not come?

14. John eats 2/5 of a bar of chocolate. Linda eats 4/9 of what remains. If there are 80 gr left, what is the weight of the bar of chocolate?

15. Out of a deposit of oil you empty one half. Out of what remains, you empty one half again, and then you empty 11/15 of what remains. Finally, there are 36 litres left. How many litres were there at the beginning?

16. Mi hermana ha utilizado los 7/8 del dinero que tiene en pagarse las clases de guitarra, y la mitad de lo que quedaba en un regalo para su novio.
   a) ¿Qué fracción de dinero ha gastado?
   b) Si le quedan 5 €, ¿cuánto dinero tenía al principio?

17. Reduce and calculate:
   a) $(-3)\cdot(-3)^3\cdot(-3)^4$ b) $(-3)\cdot\left[(-3)^3\right]^2\cdot(-3)^{-4}$ c) $\left[12^3:4^3\right]^3\cdot(-5)^0\cdot 3^4$
   d) $\left(\frac{2}{3}\right)^2:\left(\frac{2}{3}\right)^3$ e) $\left(\frac{3}{5}\right)^4\cdot\left(\frac{9}{5}\right)^{-3}$ f) $\left[\left(\frac{1}{2}\right)^2\right]^{-3}$
   g) $\left(2-\frac{1}{5}\right)^2:\left(3-\frac{2}{9}\right)^{-1}$ h) $\frac{2^{-6}\cdot 4^3\cdot 3^4\cdot 9^{-2}}{2^{-4}\cdot 8\cdot 9\cdot 3^{-5}}$ i) $\frac{8^4\cdot 15^3\cdot 18^2\cdot 12^{-3}}{20^3\cdot 27^2\cdot 3^{-3}}$

18. Classify the following numbers according to number type. Remember that some numbers may be of more than one type.
   $\frac{7}{5}$ -6 21 $3{,}7373...$ $\frac{20}{5}$ $\sqrt{13}$ $0.04343...$ $1.131331333...$ $-\frac{3}{4}$ -875

19. Classify these rational numbers and convert them into fraction.
   1.321 $2.\widehat{4}$ 0.008 $5.\widehat{54}$ $2.3\widehat{5}$ $0.0\widehat{36}$ $0.\widehat{945}$ $0.11\widehat{6}$

20. Write these decimal numbers in ascending order:
   5.53 $5.\widehat{53}$ $5.5\widehat{3}$ 5.5 5.56 $5.\widehat{5}$

21. Calculate expressing the decimal numbers like fractions:
   a) $2.6\widehat{9}+9.3$ b) $1.4:1.\widehat{5}+0.1$

SOLUTIONS

1. a) 3 b) 245 c) -646 d) -10 e) 336 f) -35 g) -3 h) 12

2. a) 42 b) -36 c) 84 d) 14

3. $\frac{4}{3}=\frac{12}{9}$ $\frac{5}{7}=\frac{15}{21}$ $\frac{8}{3}=\frac{16}{6}$ $\frac{2}{11}=\frac{4}{22}$ $\frac{6}{9}=\frac{2}{3}$

4. a) $\frac{2}{3}$ b) $\frac{7}{20}$ c) $\frac{15}{11}$ d) $\frac{5}{12}$

5. a) $\frac{3}{4}>\frac{3}{5}>-\frac{1}{5}>-\frac{3}{10}>-\frac{3}{2}$ b) $\frac{2}{3}>\frac{5}{12}>\frac{1}{9}>-\frac{1}{6}$

6. a) $\frac{113}{35}$ b) $\frac{29}{45}$ c) $-\frac{5}{18}$ d) $\frac{7}{16}$ e) $-\frac{1}{3}$ f) $\frac{1}{56}$

7. 140 cm

8. 81 kg

9. a) 500 ml b) Martha

10. 112 exams

11. 42 comics

12. 140 $. They paid 40 $, 60 $ and 40 $.

13. 13/20

14. 240 gr

15. 540 litres

16. a) 15/16 b) 80 €

17. a) 6561 b) -27 c) 243 d) $\frac{3}{2}$ e) $\frac{1}{45}$ f) 64 g) 9 i) 12

18. –

19. $\frac{1321}{1000}$ $\frac{22}{9}$ $\frac{1}{125}$ $\frac{61}{11}$ $\frac{106}{45}$ $\frac{2}{55}$ $\frac{35}{37}$ $\frac{7}{60}$

20. $5.5<5.53<5.5\widehat{3}<5.\widehat{5}\widehat{3}<5.\widehat{5}<5.56$

21. a) 12 b) 1