MATEMÁTICAS -- 3º ESO -- IES LOS PACOS

Worksheet 2 **3-10-2014**

Name: ……..……

1. When a bear hibernates, its heart rate drops to 10 beats per minute, which is 20% of its normal value. What is a bear's normal heart rate when not hibernating?
2. Emily's family loves to work together in the garden. They have a preference for flowers, 60% of their plants are flowers and 40% are vegetables. They have 50 plants growing in the garden. How many vegetable plants do they have?
3. David took a math test and got 35 correct and 10 incorrect answers. What was the percentage of correct answers? (Round to the nearest hundredth)
4. A student earned a grade of 80% on a math test that had 20 problems. How many problems on this test did the student answer correctly?
5. There are 36 carpenters in a crew. On a certain day, 29 were present. What percent showed up for work? (round to the nearest tenth)
6. Unas acciones que valían 1000 € suben el 60 %. Después, vuelven a subir el 25 %. ¿Cuál es el precio total después de las subidas?
7. A metal bar weighs 8.15 kg. 93% of the bar is silver. How many grams of silver are in the bar?
8. A student answered 84 problems on a test correctly and received a grade 80%. How many problems were on the test, if all the problems were worth the same number of points?
9. Pamela bought an electric drill at 85% of the regular price. She paid $32.89 for the drill. What was the regular price?
10. Una guitarra de 800 € sube el 50 %. Después, baja el 50 %. ¿Queda como estaba?
11. Ben earns $12,800 a year. About 15% is taken out for taxes. How much is taken out for taxes?
12. At a sale, shirts were sold for $15 each. This price was 80% of their original price. What was the original price?
13. There are 32 students in a class. Nine of those students are women. What percent are men?
14. El precio de una enciclopedia, 520 €, primero sube un 10 %, después sube otro 25 % y, finalmente, baja un 30 %. a) ¿Cuál es el precio final? b) ¿Cuál es el índice de variación total? c) ¿A qué porcentaje de aumento o de disminución corresponde?
15. The Royals basketball team played 75 games and won 55 of them. What percent of the games did they lose?
16. Carine deposits 1000€ into a special bank account which pays a simple interest annual rate of 7% for 3 years. How much will be in her account at the end of the investment term?
17. Sarah borrows 5000€ from her neighbour at an agreed simple interest rate of 12,5% annual. She will pay back the loan in one lump sum at the end of 2 years. How much will she have to pay her neighbour?
18. Mary gets 210€ of simple interest at the end of the 3rd year of investment. If the bank gave her an annual rate of 7%, what is the capital that Mary put at the beginning?
19. At what simple interest rate should Fritha invest if she wants to grow 2500€ to 4000€ in 5 years?
20. Gregory deposits 30000€ into a bank account that pays a simple interest rate of 5% annual. For how many years must he invest to generate 45000€?
21. You invest 1000$ for 3 years and get 10% interest compounded at the end of each year. How much do you receive at the end?

22. Write using scientific notation:

a) 7500000000
b) 4546
c) 70280
d) 0.0005
e) 0.123
f) 0.00000345

23. Write in normal notation:

a) $9{,}2 \cdot 10^{7}$
b) $7{,}35 \cdot 10^{-7}$
c) $9{,}5 \cdot 10^{-3}$
d) $9{,}5 \cdot 10^{3}$
e) $7{,}8932 \cdot 10^{6}$
f) $7{,}8932 \cdot 10^{-6}$

24. Calculate, giving the result in scientific notation:

a) $7.3 \cdot 10^{12} + 4.08 \cdot 10^{12}$
b) $9.7 \cdot 10^{14} - 5 \cdot 10^{15}$
c) $4.19 \cdot 10^{12} - 2 \cdot 10^{10}$
d) $9.52 \cdot 10^{-5} + 9 \cdot 10^{-6}$
e) $(4.3 \cdot 10^{2}) \cdot (2 \cdot 10^{-13})$
f) $(6 \cdot 10^{-1}) \cdot (5.1 \cdot 10^{-6})$
g) $(4.36 \cdot 10^{8}) : (4 \cdot 10^{-12})$
h) $(1.3 \cdot 10^{-14}) : (5.2 \cdot 10^{-20})$
i) $\dfrac{3.2 \cdot 10^{4} + 5.6 \cdot 10^{3}}{1.014 \cdot 10^{7} - 9.2 \cdot 10^{6}}$
j) $\dfrac{(4.2 \cdot 10^{12}) \cdot (5.1 \cdot 10^{-3})}{(1.05 \cdot 10^{-7}) \cdot (9.2 \cdot 10^{-5})}$

25. The speed of the light is $3 \cdot 10^{8}$ m/s. If the Sun is $1{,}5 \cdot 10^{11}$ metres from Earth, how many seconds does it take light to reach the Earth?

26. Completa y busca el error absoluto:

	Redondeo a las décimas	Redondeo a las centésimas	Truncamiento a las centésimas	Truncamiento a las milésimas
1,8945				
$2,\hat{4}$				
$0,0\hat{6}$				
1,51551...				
2,45678				

27. Calculate:

a) $(5 + 3 \cdot 2 : 6 - 4) \cdot (4 : 2 - 3 + 6) : (7 - 8 : 2 - 2)^2$
b) $[(17 - 15)^3 + (7 - 12)^2] : [(6 - 7) \cdot (12 - 23)]$
c) $\dfrac{1 - \left(\frac{3}{5} + \frac{2}{5}\right) + \frac{7}{2}}{1 + \frac{2}{3} \cdot \frac{1}{2} - \frac{1}{4}}$
d) $\dfrac{2{,}0\hat{3} - 1{,}\hat{6}}{0{,}2}$
e) $\dfrac{2{,}\hat{1} - 1{,}\hat{9}}{0{,}5 - 0{,}\hat{9}} + 1$

28. Reduce and calculate:

a) $\left(5^{-4} \cdot 5^{-2} : 5^{-4}\right)^{5}$
b) $\left[\left(\frac{3}{7}\right)^{3}\right]^{-4}$
c) $\left[(-6)^{3}\right]^{-1} \cdot \left[(-6)^{4}\right]^{2}$
d) $\left[\left(\frac{5}{2}\right)^{-5}\right]^{-3} : \left[\left(\frac{5}{2}\right)^{2}\right]^{4} : \left(\frac{5}{2}\right)$
e) $\left(6^{7} \cdot 6^{-3} \cdot 6\right)^{-2}$
f) $\left[\left(\frac{1}{3}\right)^{4} : \left(\frac{1}{3}\right)^{-5}\right]^{-3}$
g) $32^{2} \cdot 16^{-3} \cdot 2$
h) $27^{3} \cdot 81^{-1}$

SOLUTIONS

1. 50 beats per minute
2. 20 vegetable plants
3. 77.78 %
4. 16 problems
5. 80.6 %
6. 2000€
7. 7579.5 gr
8. 105 problems
9. $38.69
10. No
11. $1920
12. $18.75
13. 71.87%
14. a) 500.50€ b) 0.9625 c) Bajada 3.75%
15. 26.67%
16. 1210€
17. 6250€
18. 1000€
19. 12%
20. 10 years
21. $1331
22. –
23. –
24. a) $1.138 \cdot 10^{13}$ b) $-4.03 \cdot 10^{15}$ c) $4.17 \cdot 10^{12}$ d) $-1.042 \cdot 10^{-4}$
    e) $8.6 \cdot 10^{-11}$ f) $3.06 \cdot 10^{-6}$ g) $1.09 \cdot 10^{20}$ h) $2.5 \cdot 10^{5}$
25. 500 s
26. –
27. a) 10 b) 3 c) 42/13 d) 11/6 e) 7/9
28. –