

Ujorras Matemáticas I-2011

1) $4ab^2$, $a=2$, $b=-1 \rightarrow 4(2)(-1)^2 = 8$ R/A) 8

2) $-4x^2 + \frac{1}{2}$, $x=3 \Rightarrow -4(3)^2 + \frac{1}{2} = -4 \cdot 9 + \frac{1}{2} = \frac{-36 \cdot 2 + 1}{2} = -\frac{71}{2}$ R/D) $-\frac{71}{2}$

3) $2(a+5) + 4a$, $a=4 \Rightarrow 2(4+5) + 4(4) = 34$ R/C) 34

4) R/C) $-\frac{1}{7}$

5) R/D) xw^5

6) R/D) $-3^{-2}a^2b^2$

tienen que ser exponentes naturales

7) Para que sean semejantes tienen que tener la misma parte literal:

I. $3a^2b^2$

II. $(2ab)^2 = 4a^2b^2$

R/ Solo la I y la II

8) R/B) $14x^2$

9) $\frac{3}{5}xy - 2xy = (\frac{3}{5} - 2)xy = -\frac{7}{5}xy$ R/B) $-\frac{7}{5}xy$

10) $-\frac{2}{3}ax + \frac{5}{6}ax - 4ax = (-\frac{2}{3} + \frac{5}{6} - 4)ax = -\frac{23}{6}ax$ R/C) $-\frac{23}{6}ax$

11) $(5x^2 - 4x) + (3x - 3x^2) = 2x^2 - x$ R/A) $2x^2 - x$

12) $(2x - 5y + 7) + (-3x + 6y + 3) = -x + y + 10$ R/B) $-x + y + 10$

13) $(3a^3b - 4ab^2) - (5ab^2 - a^3b)$
 $= 3a^3b + a^3b - 4ab^2 - 5ab^2$
 $= 4a^3b - 9ab^2$ R/C) $4a^3b - 9ab^2$

14) $(5a^2 - b^2 + c) - (2a^2 + 3b^2 - c)$
 $= 5a^2 - 2a^2 - b^2 - 3b^2 + c + c$
 $= 3a^2 - 4b^2 + 2c$ R/C) $3a^2 - 4b^2 + 2c$

$$15 \quad \left(\frac{-2}{3}x^3y^5\right)\left(\frac{-4}{9}x^2y^2\right) = \left(+\frac{2}{3} \cdot \frac{4}{9}\right)x^5y^7 = \frac{8}{27}x^5y^7 \quad R/C \text{ (C)}$$

$$16 \quad 5m^4(2m^2 - 3m) = 5m^4 \cdot 2m^2 - 5m^4 \cdot 3m \\ = 10m^6 - 15m^5 \quad R/C \text{ (C)}$$

$$17 \quad -3xy(x^2y - xy^2 - 4) = -3x^2y^2 + 3xy^3 + 12xy \\ = -3x^2y^2 + 3xy^3 + 12xy \quad R/C \text{ (C)}$$

$$18 \quad (3a - 5)^2 = (3a)^2 + 2(3a)(-5) + (-5)^2 \\ = 9a^2 - 30a + 25 \quad R/C \text{ (D)}$$

$$19 \quad (2a - 3b)(4a + 2b) = 8a^2 + 4ab - 12ab - 6b^2 \\ = 8a^2 - 8ab - 6b^2 \quad R/C \text{ (C)}$$

$$20 \quad \frac{4x^2y^3z^8}{6x^2y^3z^4} = \frac{2}{3}z^4 \quad R/A \text{ (A)}$$

$$21 \quad (21m^5n^2) : (18m^3n^3) = \frac{21m^5n^2}{18m^3n^3} = \frac{7m^2}{6n} \quad R/B \text{ (B)}$$

$$22 \quad \left(\frac{-3x^4y^5z}{4}\right) : \left(\frac{9xy^6z^2}{8}\right) = \frac{-\frac{3x^4y^5z}{4}}{\frac{9xy^6z^2}{8}} = \frac{-3 \cdot 8x^4y^5z}{4 \cdot 9xy^6z^2} \\ = \frac{-2x^3}{3yz} \quad R/A \text{ (A)}$$

$$23 \quad 16x = x - 6 \Rightarrow 16x - x = -6 \Rightarrow 15x = -6 \Rightarrow x = -6/15 = -2/5 \quad R/B \text{ (B)}$$

$$24 \quad 3(x - 1) = 5x - 6 \Rightarrow 3x - 3 = 5x - 6 \Rightarrow 6 - 3 = 5x - 3x \\ \Rightarrow 3 = 2x \Rightarrow x = 3/2 \quad R/A \text{ (A)}$$

25 $12x - 18 = 21 + 35x$
 $\Rightarrow 12x - 35x = 21 + 18$
 $\Rightarrow -23x = 39$
 $\Rightarrow x = 39 / -23 = -39/23$

R/D

26 $\frac{8x+5}{x-1} = \frac{10}{6} = \frac{5}{3}$
 $\Rightarrow 3(8x+5) = 5(x-1)$
 $\Rightarrow 24x+15 = 5x-5$
 $\Rightarrow 19x = -20 \Rightarrow x = -20/19$

R/D

27 $2(x-3) = \frac{3x}{2} \Rightarrow 2x-6 = \frac{3x}{2}$
 $\Rightarrow 4x-12 = 3x \Rightarrow x = 12$

R/D

28 Tenemos dos números: x y y tal que $x > y$

$$\begin{cases} x - y = 8 \Rightarrow x - 8 = y \text{ menor} \\ x + y = 52 \end{cases}$$

$\Rightarrow x + (x - 8) = 52 \Rightarrow 2x - 8 = 52$

R/B

29 Tarjetas de Ana = a
 " " Juan = j
 Total = $t = 372$

$a + j = 372 \Rightarrow$ la suma es el total
 $a = \frac{1}{3}j \Rightarrow$ a (Ana) tiene un tercio de lo de j (Juan)

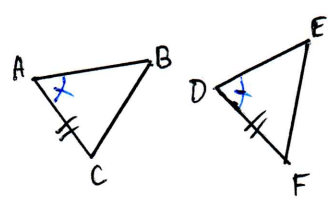
Entonces la suma: $\frac{1}{3}j + j = 372$
 $\Rightarrow \frac{4}{3}j = 372$
 $\Rightarrow 4j = 1116$
 $\Rightarrow j = 1116/4 = 279$

R/D

30 R/C

31 I. Verdadero
 II. Verdadero

R/A



32 Los ángulos en C son iguales.

$\overline{BC} = \overline{CD}$
 $\overline{AC} = \overline{CE}$

Entonces LAL

R/B

33 Las correspondencias son: $A \cong M$ $\rightarrow \angle MNR = \angle ABC$
 $B \cong N$ $= 180^\circ - 85^\circ - 38^\circ$
 $C \cong R$ $= 57^\circ$

R/B

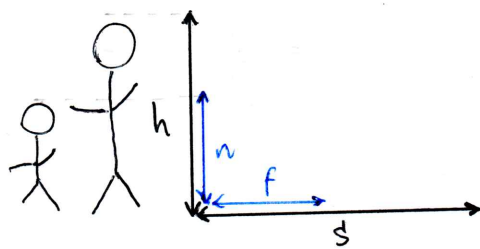
34 El ángulo en S es igual y comparte el lado \overline{NS} . R/C
 $NS \sim MS$ y $NS \sim RS$

35 R/C 36 R/C

37 $\angle M = \angle P = 30^\circ$
 $\angle N = \angle Q = \beta$
 $\angle O = \angle R = 70^\circ$ } $180^\circ = 30^\circ + 70^\circ + \beta \rightarrow \beta = 80^\circ$ R/C

38 $\angle A = \angle P = 34^\circ$
 $\angle M = \angle Q = 68^\circ$
 $\angle N = \angle R = x$ } $180^\circ = 34^\circ + 68^\circ + x \rightarrow x = 78^\circ$ R/C

39 $h = 1,93 \text{ m}$
 $s = 2,5 \text{ m}$
 $n = 1,46 \text{ m}$
 $f = ?$



$$\frac{h}{n} = \frac{s}{f} \rightarrow f = \frac{n \cdot s}{h}$$

$$\rightarrow f = 1,89 \text{ m}$$

R/C

40 por semejanza: $\frac{6+3}{AB} = \frac{6}{4} \rightarrow \overline{AB} = 6$

R/B

41 $\overline{AC} = 15 = \overline{AB} + x$

Tales: $\frac{11}{9+11} = \frac{x}{15} \rightarrow x = \frac{33}{4}$

R/B

42 $\overline{AB} = 10 = 2 + \overline{CB} \rightarrow \overline{CB} = 8$

Tales: $\frac{2}{x} = \frac{8}{12} \rightarrow x = 3$

R/B

43 $\frac{2x+1}{4} = \frac{5x-5}{7} \rightarrow 14x+7 = 20x-20 \rightarrow 20+7 = 20x-14x$
 $\rightarrow 6x = 27 \rightarrow x = \frac{27}{6} = \frac{9}{2}$ R/B

44 $\frac{16}{24} = \frac{2}{EC} \rightarrow EC = 3$ R/B

45 R/A 46 R/B 47 R/C

48 $\frac{31}{124} = 0,25$ R/C 49 R/D

50 $\frac{600}{100} = \frac{x}{22} \rightarrow 132$ R/D 51 $8+12+9+7 = 36$
R/D

52 Total = 620 $\rightarrow \frac{620}{100} = \frac{200}{x} \rightarrow x = 32\%$ R/D

53 R/A

54 $\frac{272-280}{2} = 276$ R/B

55 $\frac{70+30+90+50+71+90+40}{7} = 63$ R/B