

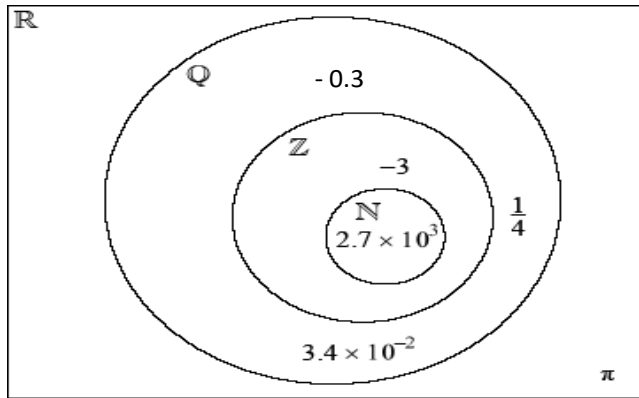
[MAA 1.1] NUMBERS - ROUNDING

SOLUTIONS

O. Practice questions

1. (a) (i) 1352.41 (ii) 1350 (iii) 1400
 (b) (i) 0.00014 (ii) 0.000135 (iii) 0.00014
 (c) 1.35×10^3
 (d) 1.35×10^{-4}
2. (a) $34450 \leq x < 34550$
 (b) $0.03005 \leq y < 0.03015$
 (c) $15.295 \leq z < 15.305$
 (d) $144.5 \leq w < 145.5$

3.



4. (a) $w = (2.6 \times 10^4) \times (5.0 \times 10^{-8})$
 $= 13 \times 10^{-4}$ or 0.0013 (if written as working) $= 1.3 \times 10^{-3}$
 (b) Statements (ii) and (iv) are incorrect.

A. Exam style questions (SHORT)

5. (a) (i) $0.030473 \approx 0.0305$ (ii) $2034999 \approx 2030000$ (iii) $2.3011 \approx 2.30$
 (b) $x = 1.3 \times 10^5 = 130000$ and $y = 2 \times 10^{-5} = 0.00002$
 (i) $x + y = 130000.00002$ (ii) $xy = 2.6$ (iii) $\frac{x}{y} = 0.65 \times 10^{10} = 6.5 \times 10^9$
 (c) A to 3 s.f. = 2.36 hence $A \in [2.355, 2.365)$
6. (a) 1.6×10^{-19} , 9.8×10^{-18} , π , 3.5, 0.006073×10^6 , 60730, 6.073×10^5
 (b) π is irrational.
7. (a) 162 cm or 1.62 m
 (b) 2 hours 45 minutes or 165 minutes
 (c) 2600
 (d) 3.84403×10^5 or 3.84×10^5
8. (a) 2.79×10^{-6}
 (b) 1.024×10^{-2} (Accept 1.02×10^{-2})

9. (a) 3.14×10^2 **or** s
 (b) 0.00314 **or** 3.14×10^{-3} **or** p
 (c) 0.3454 (0.345)
 (d) 3.454×10^{-1} (3.45×10^{-1})
10. (a) (i) $mn = 6.0 \times 2.4 \times 10^{-2} = 14.4 \times 10^{-2} = (1.44 \times 10^1) \times 10^{-2} = 1.44 \times 10^{-1}$
 (ii) $\frac{m}{n} = \frac{6.0}{2.4} \times 10^8 = 2.5 \times 10^8$
 (b) $m + n = 6000.000024$
11. (a) $x^2 = (3.1 \times 10^4)^2$ **or** $31000 \times 31000 = 9.61 \times 10^8$
 (b) $xy = 0.00744 = 7.44 \times 10^{-3}$
12. (a) $(2.6 \times 10^4)(1.9 \times 10^4) = 4.94 \times 10^8$
 (b) $2(2.6 \times 10^4) + 2(1.9 \times 10^4) = 9.0 \times 10^4$ (9×10^4)
13. (a) $(2680 + 1970) \times 2 = 9.30 \times 10^3$ cm
 (b) $2680 \times 1970 = 5279600 = 5,280,000$ (5280 thousand)
14. (a) $V = \pi 4.26^2(21.58 - 14.35) = 412.1994(123)$
 (b) 412.20
 (c) 410
 (d) 4.10×10^2
15. (a) 0.0337
 (b) (i) 0.034 (ii) 3.4%
 (c) 3.4×10^{-2}
16. (a) $V = \sqrt{\frac{500^3}{36\pi}} = 1051.305... = 1051.31 \text{ cm}^3$
 (b) 1051
 (c) 1.051×10^3
17. (a) $h = \sqrt{0.03625^2 - \frac{0.05^2}{4}} = 0.02625$
 (b) 0.026
 (c) 0.0263
 (d) 2.625×10^{-2}
18. (a) 6900 km
 (b) $2\pi(6900) = 43354$
 (c) 4.3354×10^4
19. (a) $(2\pi \times 150\,000\,000) / 365 = 2\,580\,000$ km
 (b) 2.58×10^6