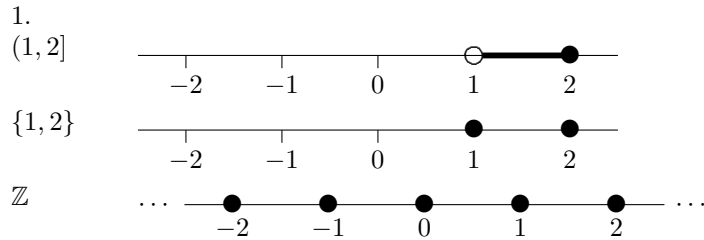


SOLUTIONS TO EXERCISES: HOLDING THIS, HOLDING THAT

IN-SECTION EXERCISES:



2. w can ‘hold’ any of the numbers in the set $[0, 1]$

3. w can ‘hold’ any of the numbers in the set $[0, 2]$

4. The order that you multiply two numbers does not affect the result. That is, you can ‘commute’ the numbers in a multiplication problem without affecting the result.

5. For all real numbers x , y , and z , $x \cdot (y \cdot z) = (x \cdot y) \cdot z$.

6. For all $x \in \mathbb{R}$ and $y \in \mathbb{R}$, $x \cdot y = y \cdot x$.

For all $x \in \mathbb{R}$, $y \in \mathbb{R}$, and $z \in \mathbb{R}$, $x \cdot (y \cdot z) = (x \cdot y) \cdot z$.

7. ab , $3x$, $5ac$, 12

8a. $3x - 4$

8b. $3(x - 4)$

8c. $\frac{x}{2} + 1$

8d. $\frac{x+1}{2}$

9a. Take a number, multiply by 5, then subtract 3.

9b. Take a number, subtract 3, then multiply by 5.

9c. Take a number, divide by 4, then subtract 1.

9d. Take a number, subtract 1, then divide by 4.

10. (a) d (b) t (c) s (d) v

11a. $(0.7)(170) = 119$; you owe \$119

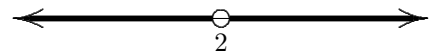
11b. $(0.8)(119) = 95.2$; you owe \$95.20

11c. $(1.05)(95.2) = 99.96$; you owe \$99.96

11d. You’ll get 4¢ change!

12a. What number is equal to 5? ANS: 5

12b. What numbers are not equal to 2? ANS: All real numbers except 2:



12c. Three times what number gives 12? ANS: 4

12d. What number, divided by 3, gives 4? ANS: 12

12e. What number, plus itself, plus itself again, gives 12? ANS: 4

12f. Two plus what number is the same as two minus that number? ANS: 0

12g. Fifteen, divided by what number, gives 3? ANS: 5

12h. Twelve, minus some number, minus the number again, gives 10. What is the number? ANS: 1

13a. Since the universal set is \mathbb{R} , the best choice is ‘Let $x \in \mathbb{R}$ ’. Read as: ‘Let x be in arr’ or ‘Let x be a real number’.

13b. Since the universal set is \mathbb{Z} , the best choice is ‘Let $k \in \mathbb{Z}$ ’. Read as: ‘Let k be in zee’ or ‘Let k be an integer’.

13c. Since $[0, 2]$ is an interval of real numbers, the best choice is ‘For all $t \in [0, 2]$ ’. You could read this as: ‘For all real numbers t between 0 and 2 (including the endpoints)’.

13d. Since $\{1, 2, 3, \dots\}$ is a subset of the integers, the best choice is ‘For all $i \in \{1, 2, 3, \dots\}$ ’. You could read this as: ‘For all positive integers i ’.

14a. number

14b. set

14c. number with universal set \mathbb{R} (or some *interval* of real numbers)

14d. number with universal set \mathbb{Z} (or some subset of \mathbb{Z})

14e. set

14f. number with universal set \mathbb{R} (or some *interval* of real numbers)

END-OF-SECTION EXERCISES:

16. EXP, number

17. SEN, T

18. EXP, number

19. SEN, T

20. EXP, set

21. SEN, F

22. EXP, number

23. SEN, T

24. EXP, set

25. SEN, true

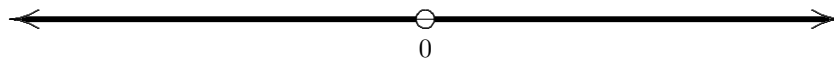
26. SEN, ST/SF

27. Twenty, divided by what number, gives 5? ANS: 4

28. What number, subtracted from 20, gives 2? ANS: 18

29. What number has the property that 3 times it is the same as 4 times it? ANS: 0

30. What number(s) have the property that 3 times them is not the same as 4 times them? ANS: all real numbers except 0



31. What number(s) have the property that when you add one to them, you get something different than when you add two to them? ANS: all real numbers



$$\lim_{n \rightarrow \infty} \left(88 + \frac{n}{n+1} \right)$$