

SOLUTIONS TO EXERCISES: THE LANGUAGE OF MATHEMATICS

IN-SECTION EXERCISES:

1. resemblance, likeness, semblance, approximation, agreement, analogy, correspondence

2a. 3

2b. $1 + 2$, $3 + 0$, $\frac{1}{2} + \frac{5}{2}$, etc.

2c. $4 - 1$, $5 - 2$, $3 - 0$, etc.

2d. $6 \div 2$, $9 \div 3$, etc.

3a. The capital of Idaho is Boise.

3b. The capital of Idaho is Pocatello.

3c. $3 + 4 \equiv 7$

3d. $3 + 4 \equiv 8$

4a. true

4b. false

4c. true

4d. false

5. Proper nouns are capitalized (Idaho, Boise). The first letter of a sentence is capitalized; a declarative sentence ends with a period.

The solutions to 6 and 7 are combined:

6a. Carol; English noun

6b. Carol loves mathematics; English sentence; sometimes true/sometimes false

6c. The name 'Carol' begins with the letter 'C'; English sentence; true

6d. 7; mathematical expression

6e. $3 + 4$; 'three plus four'; mathematical expression

6f. $7 \equiv 3 + 4$; 'seven equals three plus four'; mathematical sentence; true

6g. $3 + 4 \equiv 7$; 'three plus four equals seven'; mathematical sentence; true

6h. $7 \equiv 3 + 5$; 'seven equals three plus five'; mathematical sentence; false

6i. t ; 'tee'; mathematical expression

6j. $t \equiv 2$; 'tee equals two'; mathematical sentence; sometimes true/sometimes false

6k. $0 \equiv 2 - t$; 'zero equals two minus tee'; mathematical sentence; sometimes true/sometimes false

6l. $t - 1$; 'tee minus one'; mathematical expression

6m. $t - 1 \equiv 1 - t$; 'tee minus one equals one minus tee'; mathematical sentence; sometimes true/sometimes false

6n. $t + t + t$; 'tee plus tee plus tee'; mathematical expression

6o. $t - 0 \equiv t$; 'tee minus zero equals tee'; mathematical sentence; always true

6p. $0 \equiv 1$; 'zero equals one'; mathematical sentence; false

7. (See solutions to problem 6.)

8a. $1 + 1 + 1$

8b. $\frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2}$ or $(6)(\frac{1}{2})$ or $6 \cdot \frac{1}{2}$

8c. $\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4}$ or $(12)(\frac{1}{4})$ or $12 \cdot \frac{1}{4}$

8d. $\frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2}$ or $(6)(\frac{1}{2})$ or $6 \cdot \frac{1}{2}$

END-OF-SECTION EXERCISES:

9. EXP
10. EXP
11. SEN, ST/SF
12. EXP
13. EXP
14. SEN, ST/SF
15. SEN, T
16. TRUE: The name 'Julia' begins with the letter 'J'.
FALSE: The name 'Julia' begins with the letter 'G'.
ST/SF: Julia has red hair.
17. TRUE: $1 + 2 = 3$ FALSE: $1 + 4 = 3$ ST/SF: $x = 3$
18. TRUE: $x = x$ FALSE: $x = x + 1$ ST/SF: $x = 1$