More Systems of Equations – Day 2
Purchases, Printing Press, and Current Travel
Unit 5: Real World Applications

Solve each question. Round your answer to the nearest hundredth when needed.

1. Jasmine spent $226 on books. Math books cost $22 and English books cost $29. If she bought a total of 9, then how many of each kind did she buy?

5 math books
4 English books

2. Aliyah bought 11 writing utensils for a total of $39. Pens cost $4 and pencils cost $3. How many of each writing utensil did she buy?

6 pens
5 pencils

3. Kathryn bought 5 eating utensils for a total of $12. Spoons cost $2 and forks cost $3. How many of each eating utensil did she buy?

3 spoons
2 forks

4. Ryan spent $38 on shirts. Tee shirts cost $7 and long sleeve shirts cost $5. If he bought a total of 6, then how many of each kind did he buy?

4 tee shirts
2 long sleeve shirts

5. At Eduardo's Printing Company LLC there are two kinds of printing presses: Model A which can print 50 books per day and Model B which can print 55 books per day. The company owns 5 total printing presses and this allows them to print 260 books per day. How many of each type of press do they have?

3 of Model A
2 of Model B

6. At William's Printing Company LLC there are two kinds of printing presses: Model A which can print 80 books per day and Model B which can print 35 books per day. The company owns 6 total printing presses and this allows them to print 345 books per day. How many of each type of press do they have?

3 of Model A
3 of Model B

7. James' Printing Inc. has two types of printing presses: model A and Model B. Model A can print 50 books per day and Model B can print 40 books per day. Altogether James has 11 printing presses. If he can print 470 books in a day, then how many of each press does he have?

3 of Model A
8 of Model B

8. At Perry's Printing Company LLC there are two kinds of printing presses: Model A which can print 50 books per day and Model B which can print 45 books per day. The company owns 8 total printing presses and this allows them to print 385 books per day. How many of each type of press do they have?

5 of Model A
3 of Model B

9. Going down the river a boat went 20 km/h. Going up the river it only went 8 km/h. Find the speed of the boat in still water and the speed of the current.

Boat 14 Km/h

Current 6 Km/h

10. Flying with the wind a plane went 140 km/h. Flying into the same wind the plane only went 66 km/h. What is the speed of the wind? How fast would the plane go if there were no wind?

Plane 103 Km/h

Wind 37 Km/h

11. Traveling downstream a certain boat went 16 km/h. Traveling upstream it only went 4 km/h. Find the speed of the boat in still water and the speed of the current.

Boat 10 Km/h

Current 6 Km/h

12. Traveling with the current a certain boat went 17 km/h. Against the same current it only went 9 km/h. Find the speed of the boat in still water and the speed of the current.

Boat 13 Km/h

Current 4 Km/h

13. A boat traveled 180 miles each way downstream and back. The trip downstream took 6 hours. The trip back took 9 hours. What is the speed of the boat in still water? What is the speed of the current?

Boat 25mph

Current 5mph

14. A boat traveled 150 miles each way downstream and back. The trip downstream took 6 hours. The trip back took 30 hours. Find the speed of the boat in still water and the speed of the current.

Boat 15mph

Current 10mph

15. A plane traveled 2160 kilometers each way to Houston and back. The trip there was with the wind. It took 12 hours. The trip back was into the wind. The trip back took 15 hours. Find the speed of the plane in still air and the speed of the wind.

Plane 162 Km/h

Wind 18 Km/h

16. A plane traveled 936 miles each way to Las Vegas and back. The trip there was with the wind. It took 13 hours. The trip back was into the wind. The trip back took 18 hours. What is the speed of the plane in still air? What is the speed of the wind?

Plane 62 mph

Wind 10 mph

① Total Books

Cost Equation

$-22[M + E = 9] \cdot -22$

$22M + 29E = 226$

$-22M - 22E = -198$

$\frac{7E}{7} = \frac{28}{7}$

$E = 4$

using $M + E = 9$

$M + 4 = 9$

$-4 \quad -4$

$M = 5$

5 Math Books
4 English Books

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② Total utensils

Cost Equations

$-3[P + L = 11] \cdot -3$

$4P + 3L = 39$

$-3P - 3L = -33$

$P = 6$

using $P + L = 11$

$6 + L = 11$

$-6 \quad -6$

$L = 5$

6 Pens
5 Pencils

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③ Total Utensils

Cost Equation

$-2[\$ + F = 5] \cdot -2$

$2\$ + 3F = 12$

$-2\$ - 2F = -10$

$F = 2$

using $\$ + F = 5$

$\$ + 2 = 5$

$-2 \quad -2$

$\$ = 3$

3 Spoons
2 Forks

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④ Total Shirts

Cost Equation

$-5[T + L = 6] \cdot -5$

$7T + 5L = 38$

$-5T - 5L = -30$

$\frac{2T}{2} = \frac{8}{2}$

$T = 4$

using $T + L = 6$

$4 + L = 6$

$-4 \quad -4$

$L = 2$

4 Tee Shirts
2 Long Sleeve Shirts

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⑤ Number of Presses

Total Books

$-50[A + B = 5] \cdot -50$

$50A + 55B = 260$

$-50A - 50B = -250$

$\frac{5B}{5} = \frac{10}{5}$

$B = 2$

using $A + B = 5$

$A + 2 = 5$

$-2 \quad -2$

$A = 3$

3 of Model A
2 of Model B

⑥ Number of Presses

Total Books

3	Model A
3	Model B

$-35[A + B = 6] \cdot -35$

$80A + 35B = 345$

$-35A - 35B = -210$

$\frac{45A}{45} = \frac{135}{45}$

$\boxed{A = 3}$

using $A + B = 6$

$3 + B = 6$

$-3 \quad -3$

$\boxed{B = 3}$

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⑦ Number of Presses

Total Books

3	Model A
8	Model B

$-40[A + B = 11] \cdot -40$

$50A + 40B = 470$

$-40A - 40B = -440$

$\frac{10A}{10} = \frac{30}{10}$

$\boxed{A = 3}$

using $A + B = 11$

$3 + B = 11$

$-3 \quad -3$

$\boxed{B = 8}$

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⑧ Number of Presses

Total Books

5	Model A
3	Model B

$-50[A + B = 8] \cdot -50$

$50A + 45B = 385$

$-50A - 50B = -400$

$\frac{-5B}{-5} = \frac{-15}{-5}$

$\boxed{B = 3}$

using $A + B = 8$

$A + 3 = 8$

$-3 \quad -3$

$\boxed{A = 5}$

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⑨ With Current

Against Current

Boat	14 Km/h
Current	6 Km/h

$r + c = 20$

$r - c = 8$

$\frac{2r}{2} = \frac{28}{2}$

$\boxed{r = 14}$

using $r + c = 20$

$14 + c = 20$

$-14 \quad -14$

$\boxed{c = 6}$

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⑩ With Wind

Against Wind

Plane speed	103 Km/h
Wind speed	37 Km/h

$r + w = 140$

$r - w = 66$

$\frac{2r}{2} = \frac{206}{2}$

$\boxed{r = 103}$

using $r + w = 140$

$103 + w = 140$

$-103 \quad -103$

$\boxed{w = 37}$

(11) With Current

Against Current

Boat	10 Km/h
Current	6 Km/h

$r + c = 16$

$r - c = 4$

$\frac{2r}{2} = \frac{20}{2}$

$r = 10$

Using $r + c = 16$

$10 + c = 16$

$-10 \quad -10$

$c = 6$

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(12) With Current

Against Current

Boat	13 Km/h
Current	4 Km/h

$r + c = 17$

$r - c = 9$

$\frac{2r}{2} = \frac{26}{2}$

$r = 13$

Using $r + c = 17$

$13 + c = 17$

$-13 \quad -13$

$c = 4$

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(13)

	R	· T	= D
With Current	$r + c$	6	180
Against Current	$r - c$	9	180

$\frac{(r+c)(6)}{6} = \frac{180}{6}$

$r + c = 30$

$\frac{(r-c)(9)}{9} = \frac{180}{9}$

$r - c = 20$

$r + c = 30$

$r - c = 20$

$\frac{2r}{2} = \frac{50}{2}$

$r = 25$

Using $r + c = 30$

$25 + c = 30$

$-25 \quad -25$

$c = 5$

Boat	25 mph
Current	5 mph

(14)

	R	· T	= D
With Current	$r+c$	6	150
Against Current	$r-c$	30	150

$\frac{(r+c)(6)}{6} = \frac{150}{6}$

$r+c = 25$

$\frac{(r-c)(30)}{30} = \frac{150}{30}$

$r-c = 5$

$r+c = 25$

$r-c = 5$

$\frac{2r}{2} = \frac{30}{2}$

$r = 15$

using $r+c = 25$

$15+c = 25$

$-15 \quad -15$

$c = 10$

Boat 15 mph
Current 10 mph

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(15)

	R	· T	= D
With Wind	$r+w$	12	2160
Against Wind	$r-w$	15	2160

$\frac{(r+w)(12)}{12} = \frac{2160}{12}$

$r+w = 180$

$\frac{(r-w)(15)}{15} = \frac{2160}{15}$

$r-w = 144$

$r+w = 180$

$r-w = 144$

$\frac{2r}{2} = \frac{324}{2}$

$r = 162$

using $r+w = 180$

$162+w = 180$

$-162 \quad -162$

$w = 18$

Plane Speed 162 km/h
Wind Speed 18 km/h

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(16)

	R	· T	= D
With Wind	$r+w$	13	936
Against Wind	$r-w$	18	936

$\frac{(r+w)(13)}{13} = \frac{936}{13}$

$r+w = 72$

$\frac{(r-w)(18)}{18} = \frac{936}{18}$

$r-w = 52$

$r+w = 72$

$r-w = 52$

$\frac{2r}{2} = \frac{124}{2}$

$r = 62$

using $r+w = 72$

$62+w = 72$

$-62 \quad -62$

$w = 10$

Plane speed 62 mph
Wind speed 10 mph