More Systems of Equations – Day 3
Purchases, Printing Press, and Current Travel
Unit 5: Real World Applications

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

1. Natalie spent $30 on shirts. Tee shirts cost $9 and long sleeve shirts cost $4. If she bought a total of 5, then how many of each kind did she buy?

2 tee shirts
3 long sleeve shirts

2. Jenny bought 10 shirts for a total of $180. Fancy shirts cost $23 and plain shirts cost $13. How many of each type of shirt did she buy?

5 fancy shirts
5 plain shirts

3. Leah bought 7 shirts for a total of $66. Tee shirts cost $8 and long sleeve shirts cost $13. How many of each type of shirt did she buy?

5 tee shirts
2 long sleeve shirts

4. Molly bought 9 eating utensils for a total of $30. Spoons cost $4 and forks cost $2. How many of each eating utensil did she buy?

6 spoons
3 forks

5. Michelle's Printing Inc. has two types of printing presses: Model A and Model B. Model A can print 70 books per day and Model B can print 60 books per day. Altogether Michelle has 8 printing presses. If she can print 500 books in a day, then how many of each press does she have?

2 of Model A
6 of Model B

6. Aliyah's Printing Inc. has two types of printing presses: Model A and Model B. Model A can print 70 books per day and Model B can print 65 books per day. Altogether Aliyah has 20 printing presses. If she can print 1350 books in a day, then how many of each press does she have?

10 of Model A
10 of Model B

7. At Maya's Printing Company LLC there are two kinds of printing presses: Model A which can print 70 books per day and Model B which can print 45 books per day. The company owns 7 total printing presses and this allows them to print 415 books per day. How many of each type of press do they have?

4 of Model A
3 of Model B

8. At David's Printing Company LLC there are two kinds of printing presses: Model A which can print 40 books per day and Model B which can print 70 books per day. The company owns 9 total printing presses and this allows them to print 420 books per day. How many of each type of press do they have?

7 of Model A
2 of Model B

9. Flying to Tokyo with a tailwind a plane averaged 145 km/h. On the return trip the plane only average 83 km/h while flying back into the same wind. Find the speed of the plane in still air and the speed of the wind.

Plane 114 Km/h

Wind 31 Km/h

10. Going down the river a boat went 18 km/h. Going up the river it only went 6 km/h. What is the speed of the current? How fast would the boat go if there were no current?

Boat 12 Km/h

Current 6 Km/h

11. Flying with the wind a plane went 132 mph. Flying into the same wind the plane only went 64 mph. Find the speed of the plane in still air and the speed of the wind.

Plane 98mph

Wind 34 mph

12. Flying to Singapore with a tailwind a plane averaged 421 mph. On the return trip the plane only averaged 349 mph while flying back into the same wind. Find the speed of the plane in still air and the speed of the wind.

Plane 385 mph

Wind 36 mph

13. A boat traveled 240 miles each way downstream and back. The trip downstream took 12 hours. The trip back took 60 hours. Find the speed of the boat in still water and the speed of the current.

Boat 12mph

Current 8mph

14. A plane traveled 2112 miles each way to Phoenix and back. The trip there was with the wind. It took 11 hours. The trip back was into the wind. The trip back took 16 hours. What is the speed of the plane in still air? What is the speed of the wind?

Plane 162mph

Wind 30mph

15. A boat traveled 210 kilometers each way downstream and back. The trip downstream took 10 hours. The trip back took 210 hours. What is the speed of the boat in still water? What is the speed of the current?

Boat 11 Km/h

Current 10 Km/h

16. A boat traveled 240 kilometers each way downstream and back. The trip downstream took 12 hours. The trip back took 15 hours. What is the speed of the boat in still water? What is the speed of the current?

Boat 18 Km/h

Current 2Km/h

① Total Shirts
Cost Equation

2 Tee Shirts
3 Long Sleeve Shirts

$-4[T + L = 5] \cdot -4$

$9T + 4L = 30$
$-4T - 4L = -20$

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

$T = 2$

Using $T + L = 5$
$2 + L = 5$
$-2 \quad -2$
$L = 3$

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② Total Shirts
Cost Equation

5 Fancy Shirts
5 Plain shirts

$-13[F + P = 10] \cdot -13$

$23F + 13P = 180$
$-13F - 13P = -130$

$\frac{10F}{10} = \frac{50}{10}$

$F = 5$

Using $F + P = 10$
$5 + P = 10$
$-5 \quad -5$
$P = 5$

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③ Total Shirts
Cost Equation

5 Tee Shirts
2 Long Sleeve Shirts

$-8[T + L = 7] \cdot -8$

$8T + 13L = 66$
$-8T - 8L = -56$

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

$L = 2$

Using $T + L = 7$
$T + 2 = 7$
$-2 \quad -2$
$T = 5$

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④ Total Utensils
Cost Equation

6 Spoons
3 Forks

$-2[\$ + F = 9] \cdot -2$

$4\$ + 2F = 30$
$-2\$ - 2F = -18$

$\frac{2\$}{2} = \frac{12}{2}$

$\$ = 6$

Using $\$ + F = 9$
$6 + F = 9$
$-6 \quad -6$
$F = 3$

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⑤ Number of Presses
Total Books

2 of Model A
6 of Model B

$-60[A + B = 8] \cdot -60$

$70A + 60B = 500$
$-60A - 60B = -480$

$\frac{10A}{10} = \frac{20}{10}$

$A = 2$

Using $A + B = 8$
$2 + B = 8$
$-2 \quad -2$
$B = 6$

⑥ Number of Presses

Total Books

10 of Model A
10 of Model B

$-70[A + B = 20] \cdot -70$

$70A + 65B = 1350$

$-70A - 70B = -1400$

$\frac{-5B}{-5} = \frac{-50}{-5}$

$B = 10$

Using $A + B = 20$

$A + 10 = 20$

$-10 \quad -10$

$A = 10$

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⑦ Number of Presses

Total Books

4 of Model A
3 of Model B

$-70[A + B = 7] \cdot -70$

$70A + 45B = 415$

$-70A - 70B = -490$

$\frac{-25B}{-25} = \frac{-75}{-25}$

$B = 3$

Using $A + B = 7$

$A + \quad = 7$

$A = 4$

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⑧ Number of Presses

Total Books

7 of Model A
2 of Model B

$-40[A + B = 9] \cdot -40$

$40A + 70B = 420$

$-40A - 40B = -360$

$\frac{30B}{30} = \frac{60}{30}$

$B = 2$

Using $A + B = 9$

$A + 2 = 9$

$-2 \quad -2$

$A = 7$

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⑨ With Wind

Against Wind

Plane Speed 114 Km/h
Wind Speed 31 Km/h

$r + w = 145$

$r - w = 83$

$\frac{2r}{2} = \frac{228}{2}$

$r = 114$

Using $r + w = 145$

$+w = 145$

$w = 31$

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⑩ With Current

Against Current

Boat Speed 12 Km/h
Current Speed 6 Km/h

$r + c = 18$

$r - c = 6$

$\frac{2r}{2} = \frac{24}{2}$

$r = 12$

using $r + c = 18$

$12 + c = 18$

$-12 \quad -12$

$c = 6$

(11) With Wind
Against Wind

Plane Speed	98 mph
Wind speed	34 mph

$r + w = 132$
$r - w = 64$

$\frac{2r}{2} = \frac{196}{2}$

$r = 98$

Using $r + w = 132$

$98 + w = 132$

$w = 34$

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(12) With Wind
Against Wind

Plane speed	385 mph
Wind speed	36 mph

$r + w = 421$
$r - w = 349$

$\frac{2r}{2} = \frac{770}{2}$

$r = 385$

Using $r + w = 421$

$385 + w = 421$

$-385 \quad -385$

$w = 36$

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(13)

	R	· T	= D
With Current	$r + c$	12	240
Against Current	$r - c$	60	240

$\frac{(r+c)(12)}{12} = \frac{240}{12}$

$r + c = 20$

$\frac{(r-c)(60)}{60} = \frac{240}{60}$

$r - c = 4$

$r + c = 20$
$r - c = 4$

$\frac{2r}{2} = \frac{24}{2}$

$r = 12$

Using $r + c = 20$

$12 + c = 20$

$c = 8$

Boat speed	12 mph
Current speed	8 mph

(14)

	R	· T	= D
With Wind	$r+w$	11	2112
Against Wind	$r-w$	16	2112

$\frac{(r+w)(11)}{11} = \frac{2112}{11}$

$r+w = 192$

$\frac{(r-w)(16)}{16} = \frac{2112}{16}$

$r-w = 132$

$r+w = 192$
$r-w = 132$

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

$r = 162$

Using $r+w = 192$

$162 + w = 192$

$-162 \quad -162$

$w = 30$

Plane speed 162 mph
Wind speed 30 mph

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(15)

	R	· T	= D
With Current	$r+c$	10	210
Against Current	$r-c$	210	210

$\frac{(r+c)(10)}{10} = \frac{210}{10}$

$r+c = 21$

$\frac{(r-c)(210)}{210} = \frac{210}{210}$

$r-c = 1$

$r+c = 21$
$r-c = 1$

$\frac{2r}{2} = \frac{22}{2}$

$r = 11$

Using $r+c = 21$

$11 + c = 21$

$-11 \quad -11$

$c = 10$

Boat Speed 11 km/h
Current Speed 10 km/h

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(16)

	R	· T	= D
With Current	$r+c$	12	240
Against Current	$r-c$	15	240

$\frac{(r+c)(12)}{12} = \frac{240}{12}$

$r+c = 20$

$\frac{(r-c)(15)}{15} = \frac{240}{15}$

$r-c = 16$

$r+c = 20$
$r-c = 16$

$\frac{2r}{2} = \frac{36}{2}$

$r = 18$

Using $r+c = 20$

$18 + c = 20$

$-18 \quad -18$

$c = 2$

Boat speed 18 km/h
Current speed 2 km/h