

Distance Problems – Day 2
Unit 5: Real World Applications

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

1. An aircraft carrier left Hawaii and traveled toward dry dock at an average speed of 10 km/h. A container ship left at the same time and traveled in the opposite direction with an average speed of 25 km/h. Find the number of hours the container ship needs to travel before the ships are 70 km apart.

2.00 hours

2. A cruise ship left Post 58 and traveled north at an average speed of 10 mph. A fishing boat left one hour later and traveled in the opposite direction with an average speed of 15 mph. How long does the fishing boat need to travel before the ships are 135 miles apart?

5.00 hours

3. Amy left the hospital two hours before Matt. They drove in opposite directions. Matt drove at 35 mph for one hour. After this time, they were 230 miles apart. Find Amy's speed.

65.00 mph

4. A freight train left Seoul and traveled toward New York at an average speed of 16 mph. A passenger train left one hour later and traveled in the opposite direction with an average speed of 16.2 mph. How long does the passenger train need to travel before the trains are 482.9 miles apart?

14.50 hours

5. A freight train left Chicago and traveled north at an average speed of 16.9 km/h. A passenger train left at the same time and traveled in the opposite direction with an average speed of 87.8 km/h. How long does the passenger train need to travel before the trains are 314.1 km apart?

3.00 hours

6. An aircraft carrier left the Dania Pier at the same time as a submarine. The vessels traveled in opposite directions. The submarine traveled at a speed of 11.2 km/h. After nine hours they were 162 km apart. How fast did the aircraft carrier travel?

6.80 km/h

7. A passenger train traveled to Johannesburg and back. It took four hours longer to get there than it did to come back. The average speed on the trip there was 42 mph. The average speed on the way back was 70 mph. How many hours did the trip there take?

10.00 hours

8. Kevin traveled to his cabin on the lake and back. It took two hours longer to get there than it did to come back. The average speed on the trip there was 42 mph. The average speed on the way back was 70 mph. How many hours did the trip there take?

5.00 hours

9. A container ship makes a trip to a navigational buoy and back. The trip there took ten hours, and the trip back took four hours. It averaged 30 km/h on the return trip. Find the average speed of the trip there.

12.00 km/h

10. A passenger train made a trip to the outer-most station and back. On the trip there it traveled 22.4 km/h and on the return trip it went 16 km/h. How long did the trip there take if the return trip took 5.6 hours?

4.00 hours

11. A cargo plane made a trip to Istanbul and back. On the trip there it flew 483 mph and on the return trip it went 289.8 mph. How long did the trip there take if the return trip took 12 hours?

7.20 hours

12. Adam drove to the recycling plant and back. The trip there took 1.8 hours, and the trip back took 1.5 hours. What was Adam's average speed on the trip there if he averaged 45 km/h on the return trip?

37.50 km/h

13. A cargo plane left Rome and flew east at an average speed of 216 mph. An Air Force plane left sometime later flying in the same direction at an average speed of 270 mph. After flying for eight hours the Air Force plane caught up with the cargo plane. Find the number of hours the cargo plane flew before the Air Force plane caught up.

10.00 hours

14. A cattle train left the station and traveled toward the outer-most station at an average speed of 70 mph. A diesel train left sometime later traveling in the same direction at an average speed of 80 mph. After traveling for seven hours the diesel train caught up with the cattle train. How long did the cattle train travel before the diesel train caught up?

8.00 hours

15. An Air Force plane left London and flew toward Istanbul. A jet left one hour later flying 45 km/h faster in an effort to catch up to it. After ten hours the jet finally caught up. What was the Air Force plane's average speed?

450.00 km/h

16. Paul left the airport and drove toward the town hall at an average speed of 26.6 mph. Sometime later Sam left, driving in the same direction but at an average speed of 42 mph. After driving for 1.9 hours Sam caught up with Paul. Find the number of hours Paul drove before Sam caught up.

3.00 hours

17. A cattle train left Miami and traveled west at an average speed of 28 mph. Sometime later a diesel train left traveling in the same direction but at an average speed of 39.2 mph. After traveling for 11.5 hours the diesel train caught up with the cattle train. Find the number of hours the cattle train traveled before the diesel train caught up.

16.10 hours

18. Paul left the hospital and drove toward the recycling plant. Cindi left 0.1 hours later driving 4 km/h faster in an effort to catch up to him. After 0.8 hours Cindi finally caught up. What was Paul's average speed?

32.00 km/h

①

	R	T	= D
Aircraft Carrier	10 km/h	t	10t
Container ship	25 km/h	t	25t

$$10t + 25t = 70$$

$$\frac{35t}{35} = \frac{70}{35}$$

$$t = 2.00 \text{ hrs}$$

②

	R	T	= D
Cruise ship	10 mph	t	10t
Fishing Boat	15 mph	t - 1	15(t - 1)

$$10t + 15(t - 1) = 135$$

$$10t + 15t - 15 = 135$$

$$\frac{25t}{25} = \frac{150}{25}$$

$$t = 6$$

Fishing Boat

$$t - 1$$

$$6 - 1$$

$$5.00 \text{ hours}$$

③

	R	T	= D
Amy	r	3 hrs	3r
Matt	35 mph	1 hr	35 miles

$$3r + 35 = 230$$

$$\frac{3r}{3} = \frac{195}{3}$$

$$r = 65.00 \text{ mph}$$

(4)

	R	T	= D
Freight	16mph	t	16t
Passenger	16.2mph	t-1	16.2(t-1)

$$16t + 16.2(t-1) = 482.9$$

$$16t + 16.2t - 16.2 = 482.9$$

$$32.2t = 499.1$$

$$t = 15.50 \text{ hours}$$

Passenger Train
t-1

15.50 - 1

14.50 hours

(5)

	R	T	= D
Freight	16.9 km/h	t	16.9t
Passenger	87.8 km/h	t	87.8t

$$16.9t + 87.8t = 314.1$$

$$104.7t = 314.1$$

$$t = 3.00 \text{ hours}$$

(6)

	R	T	= D
Aircraft Carrier	r	9	9r
Submarine	11.2 km/h	9	100.8 km

$$9r + 100.8 = 162$$

$$9r = 61.2$$

$$r = 6.80 \text{ km/h}$$

⑦

	R	T	= D
To Johannesburg	42 mph	t	42t
Back	70 mph	t - 4	70(t - 4)

$$42t = 70(t - 4)$$

$$42t = 70t - 280$$

$$-28t = -280$$

$$t = 10.00 \text{ hours}$$

⑧

	R	T	= D
To cabin	42 mph	t	42t
Return	70 mph	t - 2	70(t - 2)

$$42t = 70(t - 2)$$

$$42t = 70t - 140$$

$$-28t = -140$$

$$t = 5.00 \text{ hours}$$

⑨

	R	T	= D
To buoy	r	10 hrs	10r
Return	30 km/h	4 hrs	120 km

$$10r = 120$$

$$r = 12.00 \text{ km/h}$$

10

$$R \cdot T = D$$

	R	T	D
To station	22.4 km/h	t	22.4 t
Back	16 km/h	5.6 hrs	89.6 km

$$22.4t = 89.6$$

$$t = 4.00 \text{ hours}$$

11

$$R \cdot T = D$$

	R	T	D
To Istanbul	483 mph	t hrs	483 t
Return	289.8 mph	12 hrs	3477.6

$$483t = 3477.6$$

$$t = 7.20 \text{ hours}$$

12

$$R \cdot T = D$$

	R	T	D
To plant	r	1.8 hrs	1.8r
Back	45 km/h	1.5 hrs	67.5

$$1.8r = 67.5$$

$$r = 37.50 \text{ km/h}$$

13

$$R \cdot T = D$$

	R	T	D
Cargo Plane	216mph	t	216t
Air Force Plane	270mph	8hrs	2160 mi

$$216t = 2160$$

$$t = 10.00 \text{ hrs}$$

14

$$R \cdot T = D$$

	R	T	D
Cattle Train	70mph	t	70t
Diesel Train	80mph	7hrs	560

$$70t = 560$$

$$t = 8.00 \text{ hours}$$

15

$$R \cdot T = D$$

	R	T	D
Air Force	r	11hrs	11r
Jet	r + 45	10hrs	10(r + 45)

$$11r = 10(r + 45)$$

$$11r = 10r + 450$$

$$r = 450.00 \text{ km/h}$$

16)

	R	T	= D
Paul	26.6 mph	t	26.6t
Sam	42 mph	1.9 hrs	79.8 mi

$$26.6t = 79.8$$

$$t = 3.00 \text{ hours}$$

17)

	R	T	= D
Cattle Train	28 mph	t	28t
Diesel Train	39.2 mph	11.5 hrs	450.8 mi

$$28t = 450.8$$

$$t = 16.10 \text{ hours}$$

18)

	R	T	= D
Paul	r	0.9 hrs	0.9r
Cindi	r + 4	0.8 hrs	0.8(r + 4)

$$0.9r = 0.8(r + 4)$$

$$0.9r = 0.8r + 3.2$$

$$0.1r = 3.2$$

$$r = 32.00 \text{ Km/h}$$