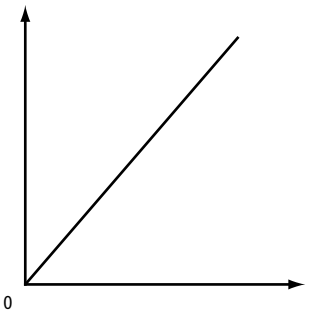
## Practice Final Exam

**1.** B
**2.** A
**3.** C
**4.** A
**5.** A
**6.** B
**7.** A
**8.** 44 in.
**9.** D
**10.** B
**11.** 4
**12.** B
**13.** D
**14.** 0.1 $m^3$
**15.** C
**16.** D
**17.** A
**18.** C
**19.** 216
**20.** D
**21.** C
**22.** 1
**23.** A
**24.** A
**25.** D
**26.** C
**27.** B
**28.** B
**29.** B
**30.** D
**31.** B
**32.** D
**33.** C
**34.** A
**35.** 4.5
**36.** 3
**37.** C
**38.** D
**39.** 72 km
**40.** C
**41.** A
**42.** C
**43.** C
**44.** D
**45.** 32°
**46. a)** Rate of change $= \frac{600 \text{ m}}{8 \text{ min}} = \frac{75 \text{ m}}{\text{min}}$. The rate of change is 75 m per minute.

**b)**

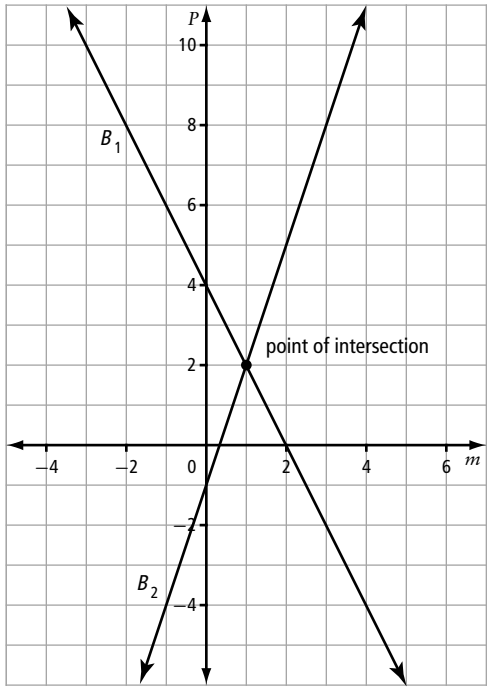



**c)** 24(tan 14°) + 24(tan 38°) =
5.983 872... + 18.750 854 = 24.734 726...
The chairs are approximately 25 ft apart.

**47.** Example:

- Stage A: The car starts from rest and accelerates at a constant rate to reach a speed of 90 km/h, which it maintains for almost 2 h.
- Stage B: The car decelerates quickly over a short period of time to 50 km/h (perhaps while entering the outskirts of a town.
- Stage C: The car accelerates back up to 90 km/h.
- Stage D: The cruise control is set and the car travels at a constant speed of 90 km/h for more than 2 h.
- Stage E: The car decelerates and stops. The approximate trip time is 5 h.

**48. a)** The solution is (1, 2).




**b)** $3(1) + \frac{3}{2}(2) = 6$

**c)** After 2 months (since at 2 months the profit is \$0)

**d)** Answers may vary. Example: In order to launch the new product, the company has start-up production costs, which in this case amount to \$1000.

**e)** Trial 1:

$B_1$: $P = \frac{1}{2}m + \frac{3}{2}$

$B_2$: $P = \frac{1}{2}m + \frac{3}{2}$

Both equations are identical. Therefore, there is an infinite number of solutions. The company would be unable to use these equations to compare sales of the two products.

Trial 2:

$B_1$: $\frac{6}{5}P = 3m - 2$

$P = \frac{5}{2}m - \frac{5}{3}$

$B_2$: $\frac{1}{5}P = \frac{1}{2}m - \frac{2}{3}$

$P = \frac{5}{2}m - \frac{10}{3}$

The lines representing these equations are parallel. Therefore, they have no points in common. The company would be unable to find a common time period for sales of the two products.