Grade 9 Assessment of Mathematics
Winter 2009

Sample Assessment Questions: Applied

Student Answer Sheet

Enter your multiple-choice answers on this sheet.

- To indicate your answer, **use an HB pencil to fill in the circle completely,** as shown below:

    Like this: ● Not like this: ⊗ ☑ ◖ ◉

- If you fill in more than one answer to a question, the question will be scored incorrect.
- Cleanly erase any answer you wish to change and fill in the circle for your new answer.

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1. ⓐ ⓑ ⓒ ⓓ
2. ⓐ ⓑ ⓒ ⓓ
3. ⓐ ⓑ ⓒ ⓓ
4. ⓐ ⓑ ⓒ ⓓ
5. ⓐ ⓑ ⓒ ⓓ
6. Respond in booklet.

7. ⓐ ⓑ ⓒ ⓓ
8. ⓐ ⓑ ⓒ ⓓ
9. ⓐ ⓑ ⓒ ⓓ
10. ⓐ ⓑ ⓒ ⓓ
11. ⓐ ⓑ ⓒ ⓓ

12. ⓐ ⓑ ⓒ ⓓ
13. ⓐ ⓑ ⓒ ⓓ
14. ⓐ ⓑ ⓒ ⓓ
15. Respond in booklet.
16. Respond in booklet.

17. ⓐ ⓑ ⓒ ⓓ
18. ⓐ ⓑ ⓒ ⓓ
19. ⓐ ⓑ ⓒ ⓓ
20. ⓐ ⓑ ⓒ ⓓ
21. Respond in booklet.
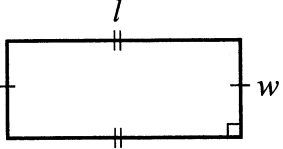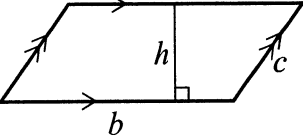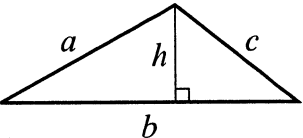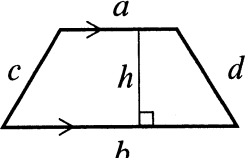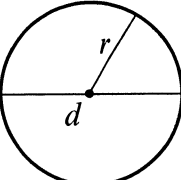
End of Assessment
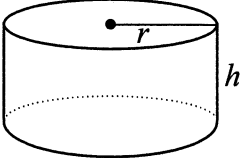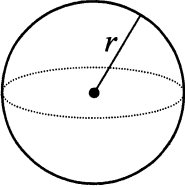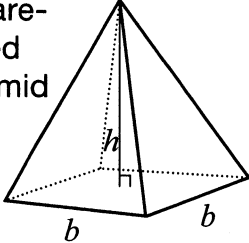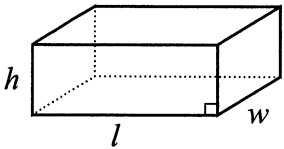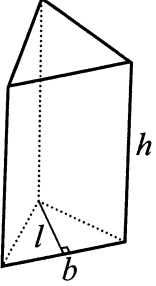
Print Student Name: _____

_____

Student Signature: _____

Formula Sheet
Grade 9 Applied

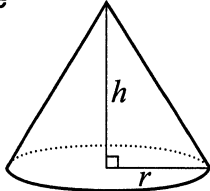| Geometric Figure	Perimeter	Area
Rectangle	$P = l + l + w + w$ or $P = 2(l + w)$	$A = lw$
Parallelogram	$P = b + b + c + c$ or $P = 2(b + c)$	$A = bh$
Triangle	$P = a + b + c$	$A = \dfrac{bh}{2}$ or $A = \dfrac{1}{2}bh$
Trapezoid	$P = a + b + c + d$	$A = \dfrac{(a + b)h}{2}$ or $A = \dfrac{1}{2}(a + b)h$
Circle	$C = \pi d$ or $C = 2\pi r$	$A = \pi r^2$

| Geometric Figure	Volume
Cylinder	$V = \text{(area of base)(height)}$ $V = \pi r^2 h$
Sphere	$V = \dfrac{4}{3}\pi r^3$ or $V = \dfrac{4\pi r^3}{3}$
Cone	$V = \dfrac{\text{(area of base)(height)}}{3}$ $V = \dfrac{1}{3}\pi r^2 h$ or $V = \dfrac{\pi r^2 h}{3}$
Square-based pyramid	$V = \dfrac{\text{(area of base)(height)}}{3}$ $V = \dfrac{1}{3}b^2 h$ or $V = \dfrac{b^2 h}{3}$
Rectangular prism	$V = \text{(area of base)(height)}$ $V = lwh$
Triangular prism	$V = \text{(area of base)(height)}$ $V = \dfrac{1}{2}blh$ or $V = \dfrac{blh}{2}$

1 Sunita places a ladder against a wall. For safety reasons, the ratio of the height above the ground to the distance from the wall should be 5:2.

Height above the ground

Distance from the wall
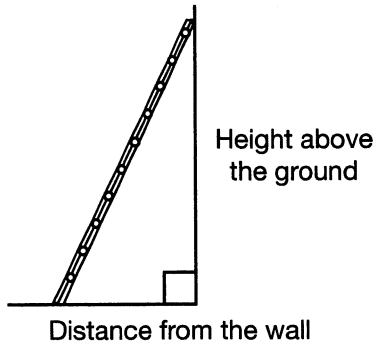
She places the top of the ladder 6.5 m above the ground. Which of the following is closest to the distance from the wall?

a   2.6 m

b   3.3 m

c   5.4 m

d   16.3 m

2 Paper is sold in different-sized packages. Which package has the lowest cost per sheet?

a $1.00 for 150 sheets

b $1.20 for 200 sheets

c $2.50 for 500 sheets

d $5.50 for 1000 sheets

3 A gardener designs a rose bed in the shape of a right triangle. The ratio of the two shorter sides is 2:1.
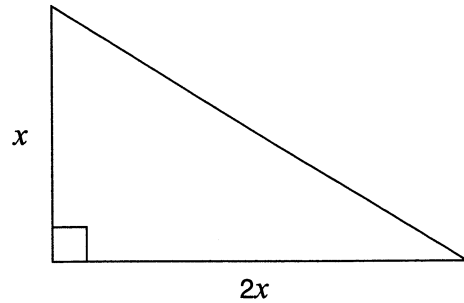
If the area is 25 square units, what are the dimensions of the shorter sides?

Hint: $A = \dfrac{bh}{2}$

a   1, 2

b   1, 3

c   5, 5

d   5, 10

4 What is a simplified form of the expression $2x - 3 - 5x + 1$?

a $3x - 2$

b $3x + 2$

c $-3x - 2$

d $-3x + 2$

5 What is the value of x that satisfies the equation $4x - 9 = 2x + 3$?

a   2

b   3

c   5

d   6

6   Jobs

Peter has two part-time jobs. His earnings for one week are represented by the equation below:
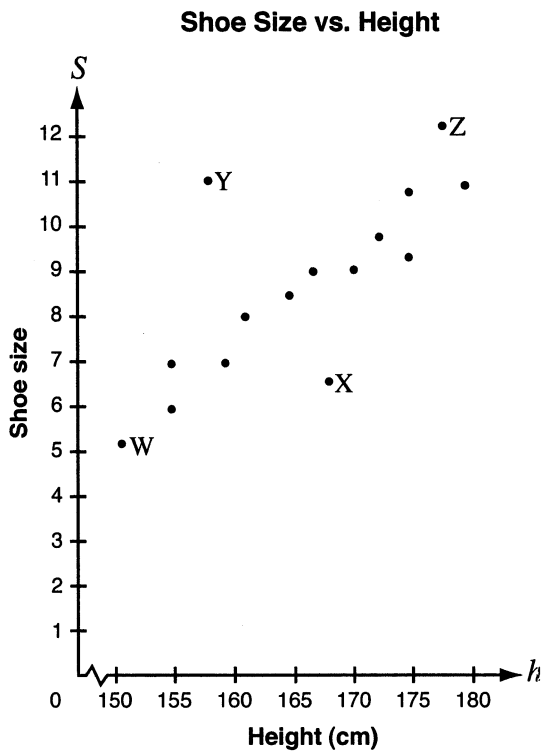
$$E = 7.50r + 8.25v$$

- E is his total earnings in one week;

- r is the number of hours he works at the restaurant and

- v is the number of hours he works at the video store.

Peter earns a total of $117.75 in one week. If he works 8 hours at the restaurant, how many hours does he work at the video store?

Show your work.
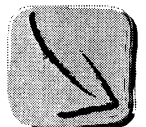
7 The graph shows the shoe sizes of girls of various heights.
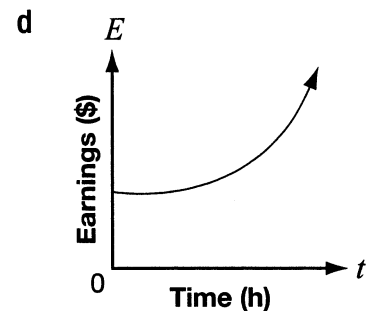
Shoe Size vs. Height

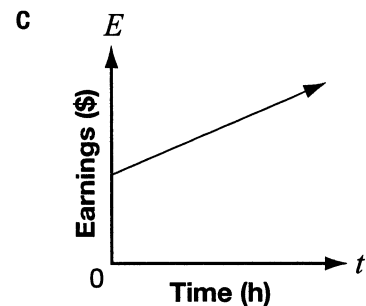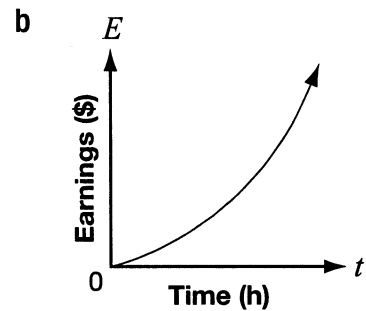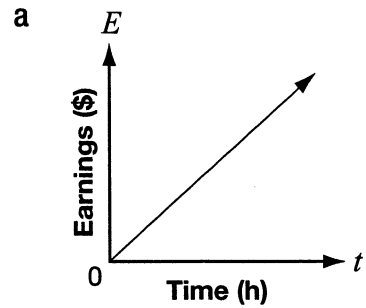Which point represents a girl whose shoe size is smaller than expected for a girl of her height?

a W

b X

c Y

d Z

8 Koshen is creating his own summer gardening job. For each garden, he will charge a $10 initial consultation fee plus $8 per hour.

Which graph best represents Koshen's earnings for each garden?

a

b

c

d

9 Which of the following tables represents a non-linear relation?

a

n	C
0	7
2	11
4	15
6	19
8	23

b

n	C
0	16
1	13
2	10
3	7
4	4

c

n	C
0	12
2	10
4	8
6	6
8	4

d

n	C
0	1
1	2
2	4
3	7
4	11

10 Joe owns an auto-repair shop. He charges his customers an hourly rate for repairs. The relationship between his income and the amount of time he works is shown below.

Income vs. Time Worked
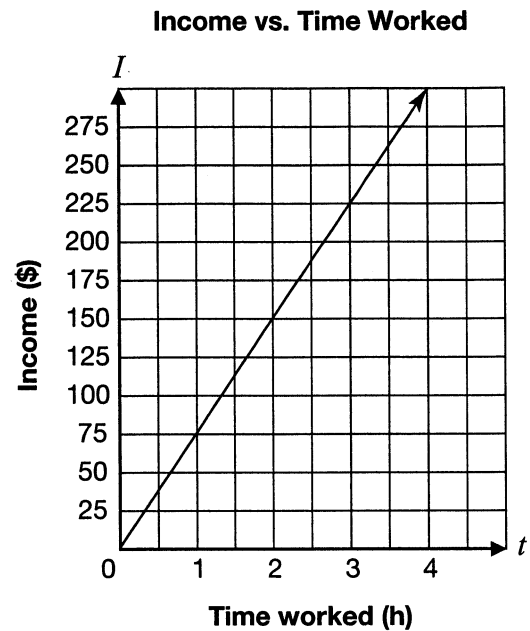
What is Joe's hourly rate?

a $25/hour

b $75/hour

c $150/hour

d $225/hour

11   A banquet hall charges a $1500 rental fee, plus $25 per person.

Which table below shows this relation?

a   **Banquet Charges**

Number of people	Total cost ($)
0	1500
5	1525

b   **Banquet Charges**

Number of people	Total cost ($)
0	1500
5	3000

c   **Banquet Charges**

Number of people	Total cost ($)
5	125
250	6250

d   **Banquet Charges**

Number of people	Total cost ($)
5	1625
250	7750

12   The cost, C, in dollars of producing n yearbooks is represented by the equation

$C = 1000 + 5n$.

How much would it cost to produce 75 yearbooks?

a $375

**b** $625

c $1000

d $1375
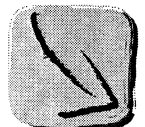
13 **Maya's Trip to School**

- Maya walks to her friend Kadeem's house, which is halfway between her home and the school.

- They stay at Kadeem's house for a few minutes, until Maya remembers that she has forgotten her lunch.

- Maya runs back home to get her lunch.

- When she gets home, her mother drives her to school so that she will not be late.

Which graph most accurately represents Maya's trip to school?

a

b

c

d
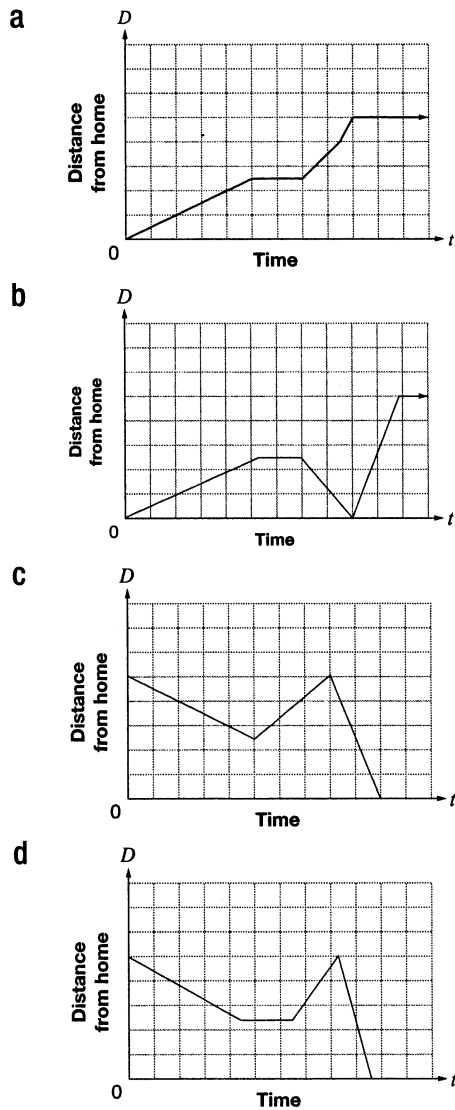
14 The data for five isosceles triangles with perimeters of 24 cm are shown below.

Triangles With 24 cm Perimeters

Length	Approximate Area of the Triangle
1 cm	6 cm²
3 cm	16 cm²
6 cm	25 cm²
10 cm	24 cm²
11 cm	19 cm²

Which graph best represents the relationship between the base length and the area of the triangle?

a

b

c

d
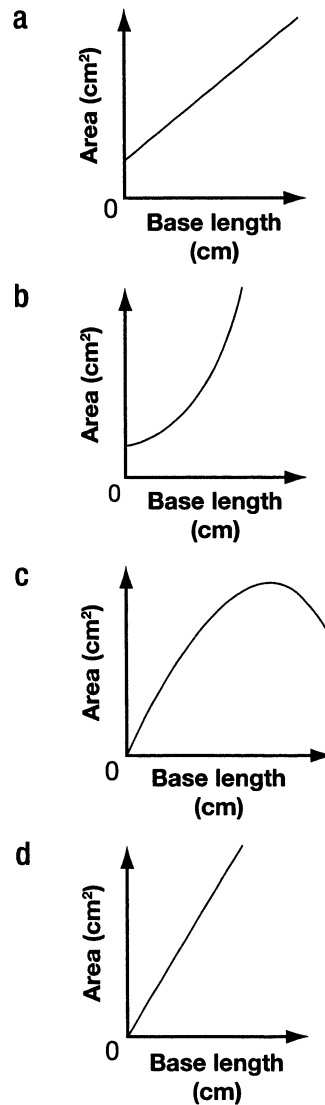
15   Poster Printing

The total cost to print posters includes a set-up fee plus a charge per poster. The graph below represents the relationship between C, the total cost, and n, the number of posters printed.
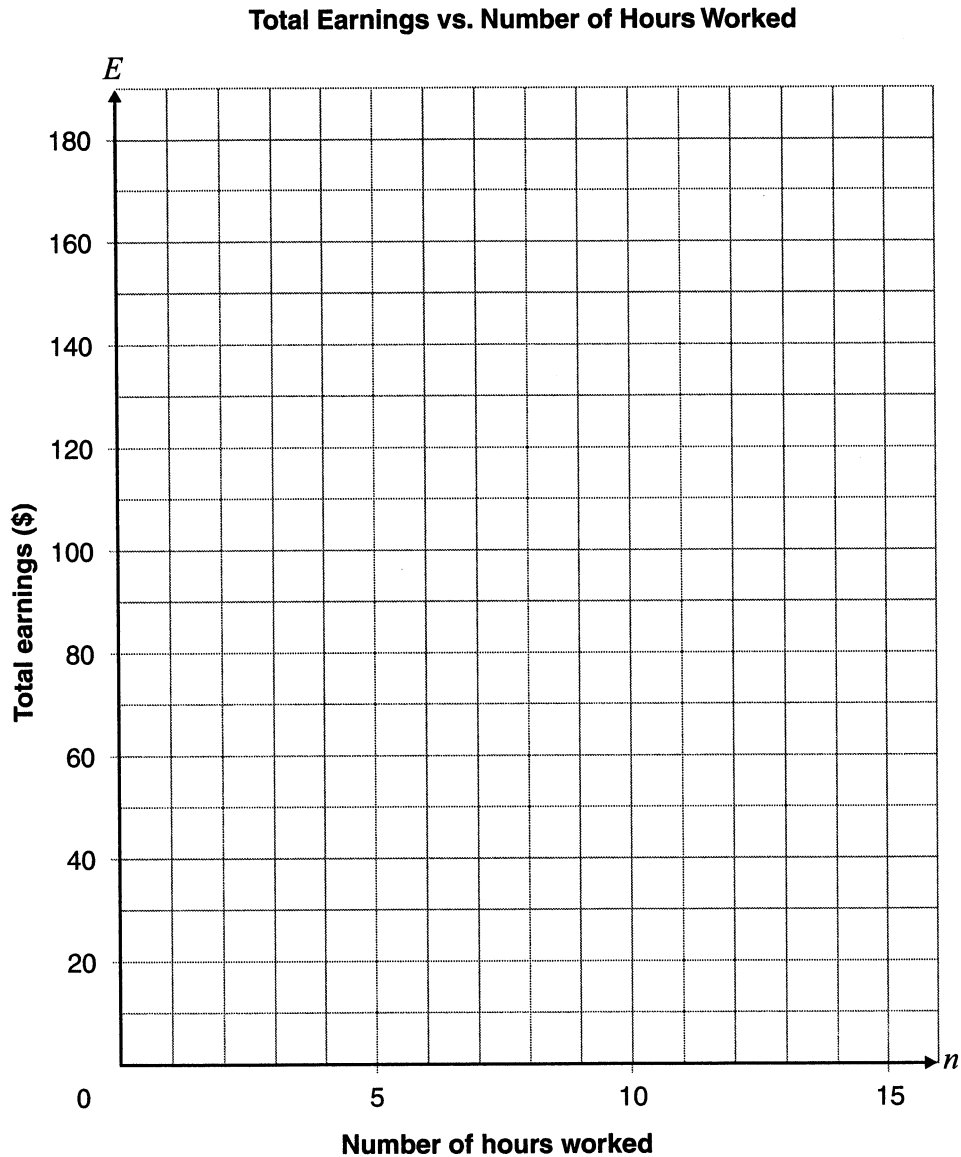
Total Cost vs. Number of Posters
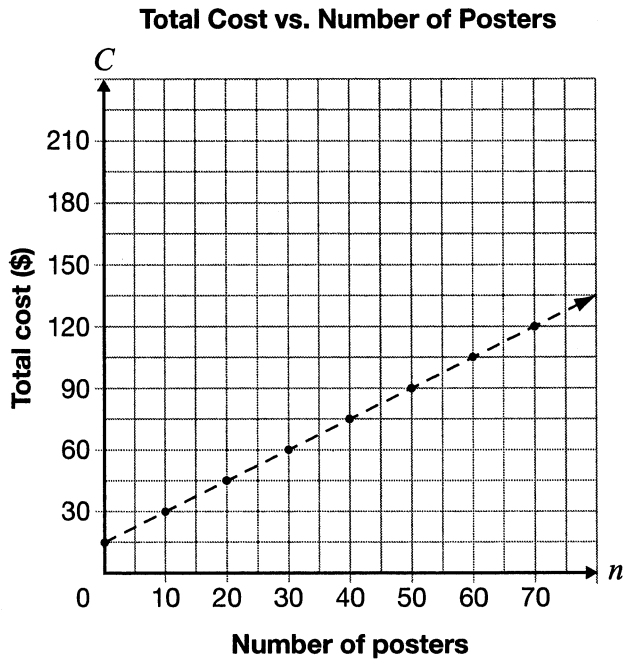
Determine the charge per poster.

Show your work.

16   Part-Time Jobs

Liz's new job offers a one-time bonus of $30 and an hourly pay rate of $10 per hour. Alex has a new job that pays $15 per hour.

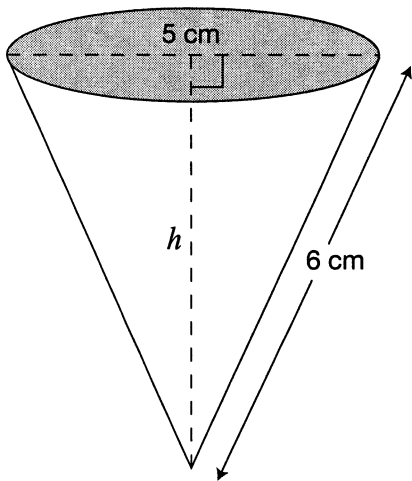Graph each person's total earnings on the grid below. Label each line.

Total Earnings vs. Number of Hours Worked

E

Total earnings ($)

180

160

140

120

100

80

60

40

20

0   5   10   15 n

Number of hours worked

Determine where the lines intersect.

The lines intersect at _____.

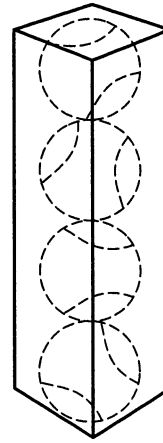What does this point represent?

17   A cone-shaped water cup is shown below.

5 cm

h

6 cm

Which of the following is closest to the height of the cup, h?
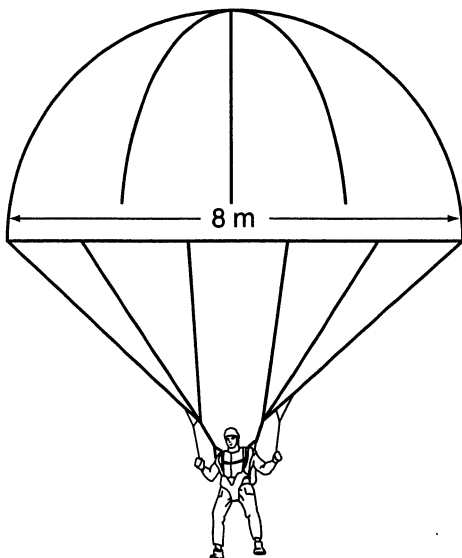
a   3.3 cm

b   3.5 cm

c   5.5 cm

d   8.5 cm

18   Tennis Inc. has decided to package 4 tennis balls in a box shaped like a rectangular prism. Tennis balls have a radius of 5 cm.

Which set of dimensions would tightly fit 4 tennis balls?

a   5 cm × 5 cm × 20 cm

b   5 cm × 5 cm × 40 cm

c   10 cm × 10 cm × 10 cm

d   10 cm × 10 cm × 40 cm

19 A fully opened parachute is shaped like a hemisphere and has a diameter of 8 m, as shown below.

8 m

Which of the following is closest to the volume of air that can fit in the fully opened parachute?

a 134 m^3

b 268 m^3

c 1072 m^3

d 2145 m^3

20 What is the value z in the diagram below?

z
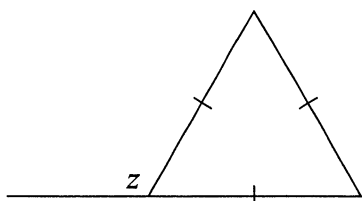
a 60°

b 100°

c 120°

d 140°

21 Parallel Illusions

Often lines that look parallel are not parallel.
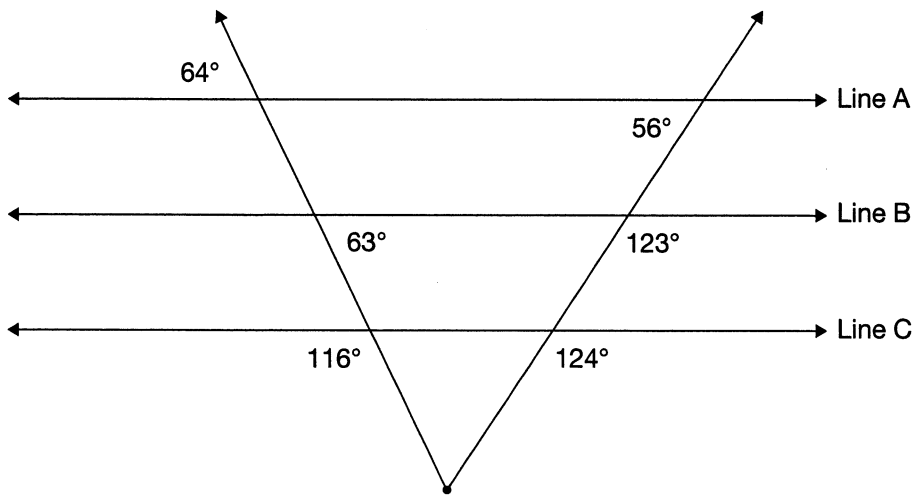
Which two lines in the diagram above are parallel?

Justify your answer using geometric properties.