MATHS

BOOKS - KAPLAN INC MATHS (ENGLISH)

INQUALITIES

Multiple Choice Question

1. Which of the following gives all values of j that satisfy the inequality $3j - 4 \le 6j + 11$?

A. $j \leq -5$

B. $j \geq -5$

C. $j \leq 5$

D. $j \leq -5$

Answer: B

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2. Which of the following numbers is not a solution to the inequality $6x - 9 \geq 7x - 5$?

A. -8

B. -5

C. -4

D. -2

Answer: D

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3. To take the neighbor's children to the movies. Mellie charges $5 for gas and $8 per hour spent with the children. Ron charges $3

for gas and $8.5 per hour spent with the children. If h represents the number of hours spent with the children, what are all the vlues of h for which Ron's total charge is greater than Mellie's total charge?

A. $h < 3$

B. $3 > h \leq 4$

C. $4 \geq h < 5$

D. $h > 4$

Answer: D

4. Yasmine is a pharmaceutical sales representative. Her firm gives her a weekly allowanceof $300 to spend on lunches with physicians and their office staffs. A restaurant from which Yasmine often buys the lunches charges $7 for a cold dish and $11 for a hot dish, including drinks. If each meal is subject to a 5.75% sales tac, which of the following inequalities represents the number of cold dishes (c) and hot dishes (h) that Yasmine can

purchase for sales-related lunches in one week, assuming the purchase all the lunches from this restaurant?

A. $7x + 11h \leq 1.0575(300)$

B. $7x + 11h \geq 1.0575(300)$

C. $1.0575(7c + 11h) \leq 300$

D. $1.0575(7c + 11h) \geq 300$

Answer: C

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5. If $\dfrac{5}{6} < \dfrac{1}{2}x - \dfrac{1}{2}y < \dfrac{3}{2}$, then what is one possible of $x - y$?

6. What is the least possible integer value for which 40% of that integer is greater than 9.6?
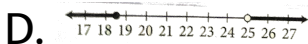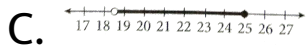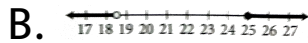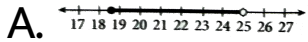
A. 4`

B. 12

C. 20

D. 25

Answer: D

7. Body mass index (BMI)is a comparison of a person's body mass to his or her height. A high BMI can be an indicator of high body fat, which can lead to health problems. According to the American Heart Association, an adult is underweight if his or her BmI is less than 18.5, or overwieght if it is greater than or equal to 25.0. Which of the following number lines

could be used to model a healthy BMI range for an adult?

A.
17 18 19 20 21 22 23 24 25 26 27

B.
17 18 19 20 21 22 23 24 25 26 27

C.
17 18 19 20 21 22 23 24 25 26 27

D.
17 18 19 20 21 22 23 24 25 26 27

Answer: A

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8. $\dfrac{2(4k + 1)}{3} \geq \dfrac{k(6 + 5) - 3}{2}$

Which of the following correctly describes the possible values of k in the inequality above?

A. $k \leq -1$

B. $k \geq -1$

C. $k \leq \dfrac{13}{17}$

D. $k \geq \dfrac{13}{17}$

Answer: C

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9. A mathe teacher decides to create several practice tests for her students before they take the SAT. She wants to make some non-calculator tests and some calculator tests os that her students will be able to practice both.She figures that each non-calculator test take her 3 hours to create, and each calculator test will take 4 hours to create. If she is willings to devote at most 6 hours per week of her time for the next 5 weeks to create the practice tests, and she wants to provide at least 8 practice tests, which of the following

systems of inequalities can help her determine

how many of each type of test she can create?

A. $n + c \geq 8$

$3n + 4c \leq 6$

B. $n + c \geq 8$
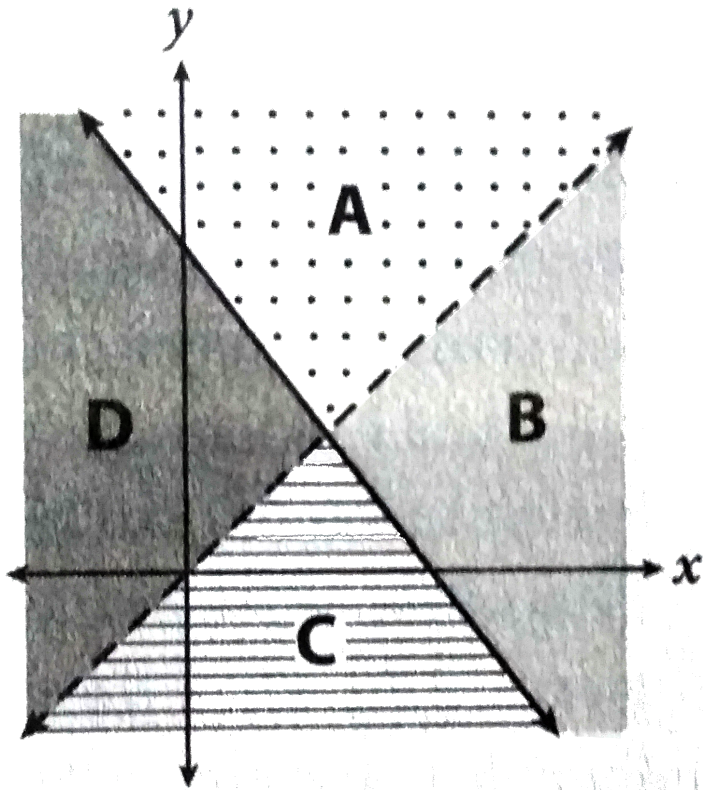
$3n + 4c \leq 30$

C. $n + c \leq 8$

$3n + 4c \geq 30$

D. $n + c \geq 6$

$3n + 4c \leq 8$

Answer: B

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10.

A system of inequalities and the corresponding graph are shown above. Which part of the graph could represent all of the solutions to the system?

A. A

B. B

C. C

D. D

Answer: D

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11. A housing down payment is money that a prospective buyer provides up front when purchasing a home and is usually a percent of

the purchase price of the home. A lender typically requires private mortgage insurance (PMI) when the buyer's down payment is less than 20% of the purchase price. To secure a mortgage buyers also need to have additional cash on hand for closing costs and prepaid property tax. Suppose a buyer wants to purchase a $375,000 house and must have $7,200 on hand for closing costs and property tax. Which of the following inequalities represents the total funds (f) the buyer must have on hand to secure the mortgage without having to pay PMI?

A. $f \leq 0.2(375,000) + 7,200$

B. $f \geq 0.2(375,000) + 7,200$

C. $f \leq 0.2(375,000 + 7,200)$

D. $f \geq 0.2(375,000 + 7,200)$

Answer: B

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12. If $\dfrac{-5}{2} < -2m + 1 < \dfrac{-7}{5}$, what is the greatest possible integer value of the expression $10m - 5$?

A. 6

B. 7

C. 10

D. 12

Answer: D

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13. $18,000 + x \leq 72,000$

The federal interstate weight limit for

particular four-axle transfer truck is 18,000

pounds per axle. The cab (front) of the truck weighs 11,000 pounds, and the trialer of the truck, when empty, weighs 7,000 pounds. The inequalities above represents the legacally permissibel weight range for this truck when travelling on an interstate. What does the value 18,000 represent in the inequality?

A. The weight of the truck when fully loaded

B. The weight of the truck when the trialer is empty

C. The maximum weight allowed per axle

D. The maximum weight of the cargo being

transported.

Answer: B

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14. A contruction company perpares an estimate to intall a new pool for a home owner. The estimate includes h hours of labor, where $h > 80$. The company's goal is for the

estimate to be within 8 hours of the actual number of hours of labor. If the company meets the goals and it takes a hours of actual labor, which inequality represents the relationship between the estimated number of hours of labor and the actual number of hours of labor?

A. $a + h \leq 8$

B. $a \geq h + 8$

C. $a \leq h + 8$

D. $-8 \leq a - h \leq 8$

Answer: D

15. Margo can peel and slice at least 10 dozen apples per hour and at most 15 dozen apples per hour. Based on this information,what is the possible amount of time, in hours, that it could take Margo to peel and slice 60 dozen apples?

16. The earth is made up of four primary layers: the inner core, outer core, mantle, and crust.The outer core is more than 800 miles and less than 2,200 miles from the Earth's center. Which of the following inequalities represents all possible distances, d, in miles, from the Earth's center that are in the outer core?
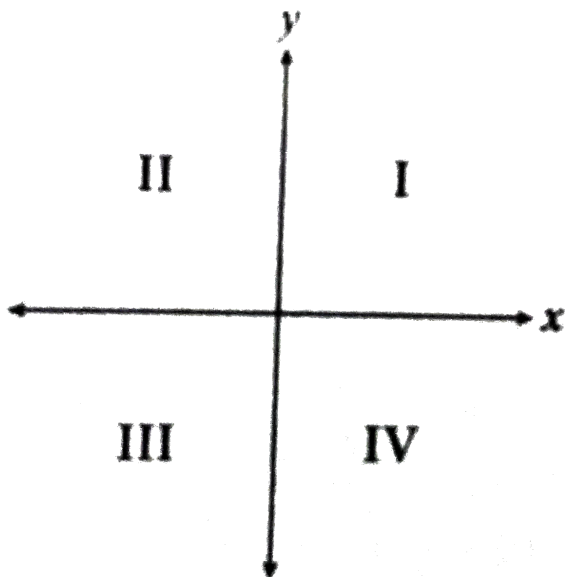
A. $|d + 800| < 2,200$

B. $|d - 800| < 2,200$

C. $|d + 1,500| < 700$

D. $|d - 1,500| < 700$

Answer: D

17.

If the system of inequalities given by

$x + 3y \leq 12$ and $2x - 3y \leq -3$ is graphed

on the coordinate plane above, which

quadrant of the plane contains no solutions

to the system?

A. Quadrant I

B. Quadrant IV

C. Quadrant I and IV

D. Quadrant III and IV

Answer: B

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18.

A phase diagram shows the temperatures and

pressure at which chemical substance exists in

a certain phase (solid, liquid, or gas). A sample

phase diagram for fictional substance is

shown in the figure, where T is temperature in

Kelvin and P is pressure in atmospheres.

Where on the diagram a certain temperature

and pressure combination falls determine the

state(s) in which the substance exists. For

example, if a certain temperature-pressure

pairing falls in the gas area (but not on the

line segment between gas and liquid), the

substance exists only as a gas. However, if

temperature-pressure pairing is on the line

segment between gas and liquid, the

substance exists as both as a gas and liquid. Assuming $T > 0$ and $p > 0$, which of the following systems of inequalities could be used to describe the temperature and pressure ranges in which this substance exists only as liquid?

A. $P < \dfrac{17}{2}T - 1,860 : P > \dfrac{5}{18}T - \dfrac{460}{9}$

B. $P > \dfrac{17}{2}T - 1,860 : P < \dfrac{5}{18}T - \dfrac{460}{9}$

C. $P < \dfrac{17}{2}T - 1,860 : P > \dfrac{11}{200}T - \dfrac{460}{9}$

D. $P \geq \dfrac{17}{2}T - 1,860 : P \leq \dfrac{11}{200}T - \dfrac{460}{9}$

Answer: A

19. $y < x + k_1$

$y > 2x + k_2$

Suppose that on a coordinate plane (0, 0) is a solution to the system of inequalities given above. Which of the following conclusions about k_1 and k_2 must be true?

A. $k_1 < k_2$

B. $k_2 < k_1$

C. $|k_1| < |k_2|$

D. $k_1 = -k_2$

Answer: B

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20. The variable x and y represent numbers for which the statements $x - y > 300$ and $\dfrac{y}{x} = 0.625$ are true. What is the smallest integer that x can equal?

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