DAY # 2:

Intelligent Machines

Many of the goods and services we depend on daily are now supplied by intelligent, automated machines rather than human beings. Robots build cars and other goods on assembly lines, where once there were human workers. Many of our phone conversations are now conducted not with people but with sophisticated technologies. We can now buy goods at a variety of stores without the help of a human cashier. Automation is generally seen as a sign of progress, but what is lost when we replace humans with machines? Given the accelerating variety and prevalence of intelligent machines, it is worth examining the implications and meaning of their presence in our lives.

Read and carefully consider these perspectives. Each suggests a particular way of thinking about the increasing presence of intelligent machines.

Perspective One

What we lose with the replacement of people by machines is some part of our own humanity. Even our mundane daily encounters no longer require from us basic courtesy, respect, and tolerance for other people.

Perspective Two

Machines are good at low-skill, repetitive jobs, and at high-speed, extremely precise jobs. In both cases they work better than humans. This efficiency leads to a more prosperous and progressive world for everyone.

Perspective Three

Intelligent machines challenge our long-standing ideas about what humans are or can be. This is good because it pushes both humans and machines toward new, unimagined possibilities.

Read and consider the issue and perspectives, state your own perspective on the issue, and analyze the relationship between your perspective and at least one other perspective on the issue

Algebra 1 Builder # 43

Name:________________________

Distributing Collecting

$12x(3x^2 - 4) - 3x^3 - 4x + 6$

$4x^2 - (1 + 5x^2) - 3x(3x^2 + 4x)$

Parallel Perpendicular Lines

Determine if the lines are parallel , perpendicular or neither. Parallel (same slope) Perpendicular (slopes are negative reciprocals).

Line A $y - 8x = -5$ Line B $y = -1/8x + 1$

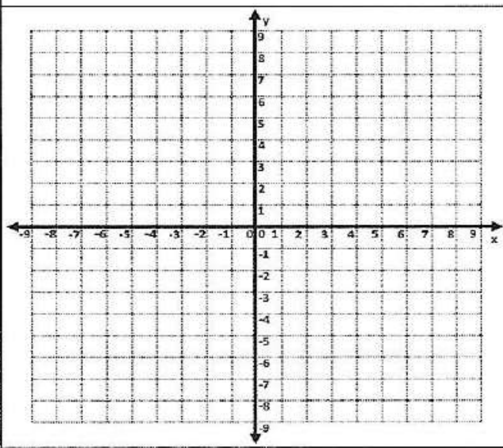
Line B $y = 1/8x + 1$ Line C $-1/8x + y = 2$

Solve Equations

$\frac{8a+7}{48} = 58$

$-2(-8 + 3y) = 4y - 10$

Linear Functions



Solve the equation for y. Make a table, plot the points, draw the line. Change to slope intercept form $y = mx + b$. Find the y-intercept by setting x to 0; then find the x-intercept by setting y to 0. **$2x + y = 1$** Use {-2, -1, 0, 1, 2} for the domain.

x	y

x-int=_____

y-int=_____ m=____

Write Inequalities

The product of 5 and the quantity 6 more than a number c is **less than** 20.

Word Problems

At an interest rate of 3%, a couple purchased a TV for \$3500.00 . Calculate the interest when paid off in 3 years.

I=PRT

Show your work!

Literal Equations

$S = 2\pi rh$ for h___________

Exponent Rules

Simplify the following expressions:

$(8^4)^3$

$(-2)^{-6} / (-2)^{-9}$

$(25 \cdot 15)^7$

Passage II

SOCIAL SCIENCE: This passage is adapted from *The Little Ice Age: How Climate Made History, 1300–1850* by Brian Fagan (©2000 by Brian Fagan).

Speak the words "ice age," and the mind turns to Cro-Magnon mammoth hunters on windswept European plains devoid of trees. But the Little Ice Age (approximately A.D. 1300–1850) was far from a deep freeze. Think instead of an irregular seesaw of rapid climatic shifts, driven by complex and still little understood interactions between the atmosphere and the ocean. The seesaw brought cycles of intensely cold winters and easterly winds, then switched abruptly to years of heavy spring and early summer rains, mild winters, and frequent Atlantic storms, or to periods of droughts, light northeasterly winds, and summer heat waves that baked growing corn fields under a shimmering haze. The Little Ice Age was an endless zigzag of climatic shifts, few lasting more than a quarter century. Today's prolonged warming is an anomaly.

Reconstructing the climate changes of the past is extremely difficult, because reliable instrument records are but a few centuries old. For earlier times, we have but what are called proxy records reconstructed from incomplete written accounts, tree rings, and ice cores. Country clergy and amateur scientists with time on their hands sometimes kept weather records over long periods. Chronicles like those of the eighteenth-century diarist John Evelyn or monastery scribes are invaluable for their remarks on unusual weather, but their usefulness in making comparisons is limited. Remarks like "the worst rain storm in memory," or "hundreds of fishing boats overwhelmed by mighty waves" do not an accurate meteorological record make, even if they made a deep impression at the time. The traumas of extreme weather events fade rapidly from human consciousness. Many New Yorkers still vividly remember the great heat wave of Summer 1999, but it will soon fade from collective memory, just like the great New York blizzard of 1888, which stranded hundreds of people in Grand Central station and froze dozens to death in deep snowdrifts.

A generation ago, we had a generalized impression of Little Ice Age climate compiled with painstaking care from a bewildering array of historical sources and a handful of tree-ring sequences. Today, the scatter of tree-ring records has become hundreds from throughout the Northern Hemisphere and many from south of the equator, too, amplified with a growing body of temperature data from ice cores drilled in Antarctica, Greenland, the Peruvian Andes, and other locations. We can now track the Little Ice Age as an intricate tapestry of short-term climatic shifts that rippled through European society during times of remarkable change—centuries that saw Europe emerge from medieval fiefdom and pass by stages through the Renaissance, the Age of Discovery, the Enlightenment, the French and Industrial revolutions, and the making of modern Europe.

To what extent did those climatic shifts alter the course of European history? Many archaeologists and historians are suspicious of the role of climate change in changing human societies—and with good reason. Environmental determinism, the notion that climate change was a primary cause of major developments like, say, agriculture, has been a dirty word in academia for generations. You certainly cannot argue that climate drove history in a direct and causative way to the point of toppling governments. Nor, however, can you contend that climate change is something that you can totally ignore. Throughout the Little Ice Age, into the nineteenth century, millions of European peasants lived at the subsistence level. Their survival depended on crop yields: cycles of good and poor harvests, of cooler and wetter spring weather, could make a crucial difference between hunger and plenty, life and death. The sufficiency or insufficiency of food was a powerful motivator of human action, sometimes on a national or even continent-wide scale, with consequences that could take decades to unfold.

Consider, for instance, the food crises that engulfed Europe during the Little Ice Age—the great hunger of 1315 to 1319, the food dearths of 1741, and 1816, "the year without a summer"—to mention only a few. These crises in themselves did not threaten the continued existence of Western civilization, but they surely played an important role in the formation of modern Europe. Some of these crises resulted from climatic shifts, others from human ineptitude or disastrous economic or political policy; many from a combination of all three. Environmental determinism may be intellectually bankrupt, but climate change is the ignored player on the historical stage.

11. The author most nearly characterizes the role of climate change in the course of history as one that:

A. is neither all important nor safely disregarded.
B. is rightly ignored by archaeologists and scientists.
C. was greater in medieval Europe than it is today.
D. will eventually be seen as direct and causative.

12. The main idea of the first paragraph is that the Little Ice Age:

F. was a period defined by prolonged global cooling.
G. occurred during the era of Cro-Magnon mammoth hunters.
H. was marked by frequent and short-term climate shifts.
J. resulted from interactions between the atmosphere and ocean.

13. The author uses the remark "the worst rain storm in memory" (line 28) primarily as an example of:

- **A.** the kind of well-meaning but ultimately useless records of unusual weather that Evelyn kept.
- **B.** how people in the eighteenth century were deeply impressed by unusual weather.
- **C.** people's preoccupation with carefully rating and comparing unusual weather events.
- **D.** how notes people in the past kept about unusual weather are of limited meteorological value today.

14. The author indicates that the common factor in the events and periods listed in lines 50–54 is that they:

- **F.** took place during the Little Ice Age.
- **G.** were the result of the Little Ice Age.
- **H.** were unaffected by the Little Ice Age.
- **J.** occurred after the Little Ice Age.

15. By his statement in lines 71–75, the author most nearly means that during the Little Ice Age:

- **A.** food or the lack thereof could have far-reaching and long-lasting effects.
- **B.** the difference between hunger and plenty was a very small one.
- **C.** food shortages were relatively rare at the national or continental level.
- **D.** the insufficiency of food motivated peasant farmers to work harder.

16. The author uses the events listed in lines 77–79 primarily to:

- **F.** show how weather-related disasters threatened the survival of Western civilization.
- **G.** criticize subsistence-level agriculture as being too dependent on the weather.
- **H.** illustrate how environmental determinism operated in the Little Ice Age.
- **J.** suggest the part that climate shifts may have had in producing modern Europe.

17. The author cites all of the following as causes of the European food crises during the Little Ice Age EXCEPT:

- **A.** human ineptitude.
- **B.** bad economic policy.
- **C.** poor political policy.
- **D.** bankrupt intellectualism.

18. The author calls the interactions that produced the Little Ice Age climate shifts:

- **F.** powerful and relatively straightforward.
- **G.** complex and not yet well understood.
- **H.** frequent and not often studied today.
- **J.** intricate and generally beneficial to humans.

19. Which of the following is NOT listed in the passage as an element of the Little Ice Age?

- **A.** Heavy spring and early summer rains
- **B.** Intensely cold winters and easterly winds
- **C.** Droughts and light northeasterly winds
- **D.** Mild winters and an unusually calm ocean

20. The author calls which of the following an anomaly?

- **F.** The daily weather of the Little Ice Age
- **G.** Today's prolonged warming
- **H.** The climatic seesaw of the last hundred years
- **J.** Little Ice Age corn yields

GO ON TO THE NEXT PAGE.

Algebra 1 Builder # 44

Name: ______________________________

Parallel Perpendicular Lines

Write an equation of the line that passes through the given point and is <u>parallel</u> to the given line. **(Use Slope Intercept)**

(-1,3) , y = 2x + 2

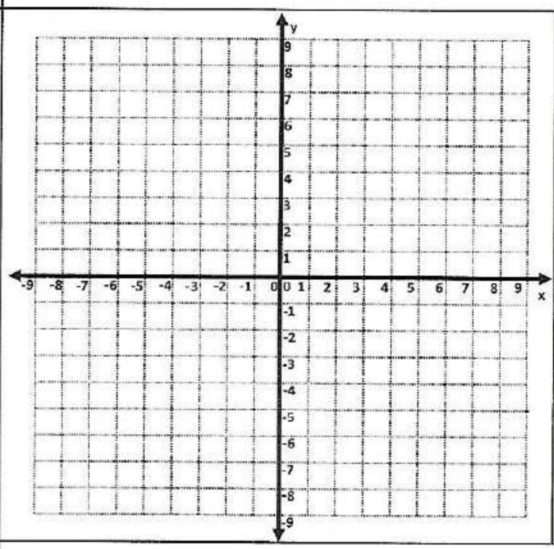
(-1,2) , y = 5x + 4

Write an equation of the line that passes through the given point and is <u>perpendicular</u> to the given line.

(3, -3) , y = x + 5

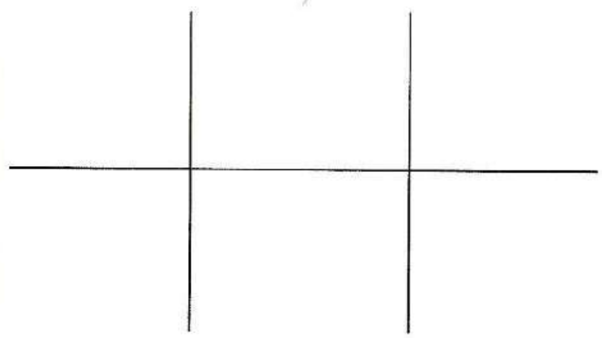
(-9,2) , y = 3x – 12

Linear Functions



Solve the equation for y. Make a table, plot the points, draw the line. Change to slope intercept form y = mx + b. Find the y-intercept by setting x to 0; then find the x-intercept by setting y to 0. **2/3x + y = 0** Use {-2, -1, 0, 1, 2} for the domain.

x	y

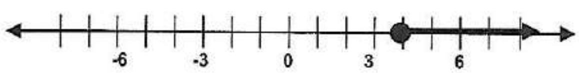


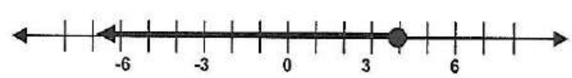
x-int=_____

y-int=_____ m=____

Inequalities

Write an inequality illustrated by the graph.





Word Problems

A couple paid $1,125 in interest at a rate of 25% for a loan at Fast Eddie's. Calculate the amount of the loan payed off in 3 years.

I=PRT

Show your work!

Literal Equations

S= ½ at^2 for a ______

Exponent Rules

Simplify the following expressions:

$(5^4)^2$

$(-5)^9 / (-5)^7$

$(22 \cdot 12)^7$

Alternative Methods of Instruction

Day 2 Assignment

Science Grades 11-12

Directions:

After reading the passage, choose the best answer to each question. You may refer to the passage as often as necessary.

Passage II

A teacher provided the table below to the students in a science class. The table gives 5 properties for each of Samples A–H. The students were told to assume that each sample is a completely solid cube composed of a single hypothetical pure substance.

Sample	Mass (g)	Volume (cm^3)	Density (g/cm^3)	Melting point (°C)	Boiling point (°C)
A	8.0	4.0	2.0	126	747
B	8.0	4.0	2.0	342	959
C	6.0	3.0	2.0	237	885
D	6.0	3.0	2.0	237	885
E	8.0	2.0	4.0	126	747
F	8.0	2.0	4.0	126	747
G	4.0	1.0	4.0	126	747
H	4.0	1.0	4.0	342	959

Note: Assume that mass, volume, and density were determined at 20°C and that all 5 properties were determined at 1 atmosphere (atm) of pressure.

The teacher asked each of 4 students to explain how these data could be used to predict which samples are composed of the same substance.

Student 1

If 2 samples have the same values for all 5 properties, they are composed of the same substance. If 2 samples have different values for any of the 5 properties, they are composed of different substances.

Student 2

If 2 samples have the same values for any 3 or more of the 5 properties, they are composed of the same substance. If 2 samples have the same values for fewer than 3 of the 5 properties, they are composed of different substances.

Student 3

If 2 samples have the same mass, volume, and density, they are composed of the same substance. If 2 samples have different values for any of these 3 properties, they are composed of different substances. Neither melting point nor boiling point, by itself, can distinguish between substances.

Student 4

If 2 samples have the same density, melting point, and boiling point, they are composed of the same substance. If 2 samples have different values for any of these 3 properties, they are composed of different substances. Neither mass nor volume, by itself, can distinguish between substances.

7. Based on Student 1's explanation, the same substance composes both of the samples in which of the following pairs?

A. Samples A and B
B. Samples B and C
C. Samples C and D
D. Samples D and E

8. Based on Student 3's explanation, the same substance composes both of the samples in which of the following pairs?

F. Samples A and C
G. Samples B and E
H. Samples F and G
J. Samples G and H

9. Suppose that the temperature of Sample A is increased to 250°C at 1 atm of pressure. At 250°C, would Sample A be a solid or a liquid?

A. Solid, because the melting point of Sample A is 126°C.
B. Solid, because the melting point of Sample A is 747°C.
C. Liquid, because the melting point of Sample A is 126°C.
D. Liquid, because the melting point of Sample A is 747°C.

10. Consider the claim that 2 samples having the same density will always be composed of the same substance, regardless of the values of the other 4 properties. Which of the students, if any, would be likely to agree with this claim?

F. Students 1 and 2 only
G. Students 2, 3, and 4 only
H. All of the students
J. None of the students

11. Which of Students 2, 3, and 4 would be likely to agree that Sample A and Sample B are composed of the same substance?

A. Students 2 and 3 only
B. Students 2 and 4 only
C. Students 3 and 4 only
D. Students 2, 3, and 4

12. Consider the statement "Two samples that have the same mass, volume, density, and boiling point are composed of the same substance, even if the two samples have different melting points." Which of Students 2 and 4, if either, would be likely to agree with this statement?

F. Student 2 only
G. Student 4 only
H. Both Student 2 and Student 4
J. Neither Student 2 nor Student 4

13. Suppose that the temperature of Sample D is increased to 890°C at 1 atm of pressure. Will the sample's density be lower than or higher than it was at 20°C and 1 atm ?

A. Lower; Sample D will be a gas, and gases generally have lower densities than do solids.
B. Lower; Sample D will be a liquid, and liquids generally have lower densities than do solids.
C. Higher; Sample D will be a gas, and gases generally have higher densities than do solids.
D. Higher; Sample D will be a liquid, and liquids generally have higher densities than do solids.