

Alg 1

Taunton  
Daniels  
Hawkins

Alg I

Packet 2

Original

## Packet #2 - Algebra I - Average/Honors

Assignment- Geometric Sequences, Exponential Equations, Growth/Decay, Compound Interest, and Half-Life, Characteristics of Exponential Equations, and Statistics

Below you will find a list of the different topics that will be covered over the next two weeks. For this section of time, we are covering Geometric Sequences, Exponential Equations, Growth/Decay, Compound Interest, and Half-Life, Characteristics of Exponential Equations and Statistics. Remember, if you complete all of the work provided to you for the remainder of the school year, it can only improve your grade. While you may be happy with your current average and decide to opt out of doing the work that is being provided to you, it is strongly encouraged that you complete every assignment as it will prepare you for future math courses. Below you will find links to each skill that would have been tested over for Test 7, 8 and 9. Please watch the following videos listed below. In Schoology you will see an assignment loaded that is called Packet 2 -Geometric Sequences, Exponential Equations, Growth/Decay, Compound Interest, and Half-Life, Characteristics of Exponential Equations, and Statistics. Make sure that you complete either the paper packet (mark your answers on the bubble sheet provided at the end of the packet) or the online portion of this assignment in Schoology, in order to receive any additional credit for the course. You do not have to do BOTH (Only do either the online assignment in Schoology, or the paper packet provided to you from BHS). Remember, if you do not do any additional work, your grade will stand as what it was at the end of 3rd 9 weeks. In order to improve your grade, you must complete the assignments you will be receiving throughout the remainder of the school year. In Schoology you will have an unlimited number of attempts to complete the assignment for the best possible grade. Your individual teacher will be available to answer any and all questions you may have so please feel free to contact them through Remind or through their school email which are listed on the BHS web page under teacher websites.

**Watch the following videos:**

### **Test 7**

1. Geometric Sequences-
  - a. <https://www.khanacademy.org/math/algebra/x2f8bb11595b61c86:sequences/x2f8bb11595b61c86:introduction-to-geometric-sequences/v/geometric-sequences-introduction>
  - b. <https://www.youtube.com/watch?v=IGFQXInm-co>
  - c. <https://www.khanacademy.org/math/algebra/x2f8bb11595b61c86:sequences/x2f8bb11595b61c86:constructing-geometric-sequences/v/explicit-and-recursive-formulas-for-geometric-sequences>
2. Solving Exponential Equations-
  - a. <https://www.youtube.com/watch?v=-OFC9iRyO1o>
  - b. <https://www.youtube.com/watch?v=6SZabhszvuQ>
  - c. <https://www.youtube.com/watch?v=evPu1YfQiKw>
3. Evaluation Exponential Equations-
  - a. <https://www.youtube.com/watch?v=YTRuOkrxwRk>
  - b. <https://www.youtube.com/watch?v=GQicZeKR9RI>
4. Exponential Growth and Decay
  - a. <https://www.youtube.com/watch?v=Lj9qNmLRmJ8>
5. Compound Interest
  - a. <https://www.youtube.com/watch?v=U0Lwyh9ONMM>

b. <https://www.youtube.com/watch?v=P182Abv3fOk>

6. Half-Life

a. <https://www.youtube.com/watch?v=QSUmPTx0k60>

b. <https://www.youtube.com/watch?v=GTzvORcnwYE>

c. <https://www.youtube.com/watch?v=vY1IMdBXqb4>

**Test 8**

7. Graphing Exponential Functions:

a. Domain/Range/Asymptote <https://www.youtube.com/watch?v=3PEeiLxGKIw>

b. Transformations <https://www.youtube.com/watch?v=yxq21ZbpcO4>

c. X and Y Intercepts <https://www.youtube.com/watch?v=yYaT18oz8vg>

d. End behavior <https://www.youtube.com/watch?v=QN1VUU26E0g>

8. Even and Odd Functions

a. <https://www.youtube.com/watch?v=3o6EVhO0n2U>

9. Average Rate of Change for Exponential Functions

a. <https://www.youtube.com/watch?v=iwTu4fHoyZO>

**Test 9**

10. \_\_\_ Measures of Central Tendency

a. <https://www.youtube.com/watch?v=ZexjdSFaxHI>

11. Mean Absolute Deviation

a. <https://www.youtube.com/watch?v=PwsXncM2pas>

12. Frequency Table and Dot Plots

a.

<https://www.khanacademy.org/math/ap-statistics/quantitative-data-ap/frequency-tables-dot-plots/v/frequency-tables-and-dot-plots>

13. Histograms

a. <https://www.khanacademy.org/math/pre-algebra/pre-algebra-math-reasoning/pre-algebra-picture-bar-graphs/v/histograms>

14. Spread and Shape of Data

a. <https://www.khanacademy.org/math/probability/data-distributions-a1/displays-of-distributions/v/shapes-of-distributions>

15. Box-Whisker Plot

a. [https://www.youtube.com/watch?v=lve6\\_u1-b8o](https://www.youtube.com/watch?v=lve6_u1-b8o)

16. Interquartile Range

a. <https://www.youtube.com/watch?v=dNHGVLXBTgl>

17. Two-way Frequency Table

a. [https://learnzillion.com/lesson\\_plans/5462-use-two-way-frequency-tables-frequency-count-vs-relative-frequency/](https://learnzillion.com/lesson_plans/5462-use-two-way-frequency-tables-frequency-count-vs-relative-frequency/)

18. Scatter Plots

a. [https://www.youtube.com/watch?v=G6Edu\\_RybxA](https://www.youtube.com/watch?v=G6Edu_RybxA)

19. Correlations (Positive / Negative) a.

a. <https://www.youtube.com/watch?v=hRK7KXfy7DM>

20. Causations / Correlations

a. <https://www.youtube.com/watch?v=VMUQSMFGBD0>

21. Line of Best Fit

a. <https://www.youtube.com/watch?v=DmGLQkUm-4g>

b. <https://www.youtube.com/watch?v=wyEBNptWQZY>

**Question 1** (1 point)

What is the 20th term in the following geometric sequence?

-2, -6, -18, -54, -162, ...

- a -6,973,568,802
- b 2,324,522,934
- c 1,162,261,467
- d -2,324,522,934

**Question 2** (1 point)

Find the first 5 terms of the sequence  $a_n = 2^n - 5$ .

- a -3, -1, 3, 11, 27
- b 7, 9, 13, 21, 37
- c -4, -1, 4, 11, 20
- d -3, -1, 1, 3, 5

**Question 3** (1 point)

Find the indicated term for the geometric sequence.

3, 12, 48, ... ;  $a_{13}$

- a 50,331,648
- b 201,326,592
- c 805,306,368
- d 16,777,216

Question 4 (1 point)

Find the indicated term for the geometric sequence.

$$a_1 = 6, r = -2; a_{14}$$

- a -49,152
- b 8192
- c 49,152
- d -8192

Question 5 (1 point)

Solve the equation.

$$4^x = 16$$

- a 2
- b 4
- c 1
- d 3

Question 6 (1 point)

Solve the equation.

$$3(6 - 3x) = \frac{1}{27}$$

- a  $\frac{1}{9}$
- b  $-3$
- c  $3$
- d  $9$

Question 7 (1 point)

Evaluate  $f(n) = 5^{2n} + 3$ , Find  $f(1)$

- a  $28$
- b  $8$
- c  $3$
- d  $-2$

Question 8 (1 point)

Evaluate  $p(x) = 4^{3x-1}$ , Find  $p(0)$

- a  $\frac{1}{256}$
- b  $\frac{1}{16384}$
- c  $16$
- d  $\frac{1}{4}$



Question 9 (1 point)

Compute the compound interest.

Susan Johnson invested \$4500 at 10% compounded monthly. How much will be in the account in 3 years? Round to the nearest cent.

- a \$139,107.06
- b \$6066.82
- c \$4613.44
- d \$5989.50

Question 10 (1 point)

Solve the problem.

Find the amount of money in an account after 9 years if \$2500 is deposited at 8% annual interest compounded quarterly.

- a \$5123.83
- b \$4997.51
- c \$5064.54
- d \$5099.72

Question 11 (1 point)

Solve.

The half-life of silicon-32 is 710 years. If 90 grams is present now, how much will be present in 600 years? Round the answer to three decimal places.

- a 50.102 g
- b 84.88 g
- c 0.257 g
- d 0 g

Question 12 (1 point)

Solve the problem.

A computer is purchased for \$4300. Its value each year is about 75% of the value the preceding year. Its value, in dollars, after  $t$  years is given by the exponential function  $V(t) = 4300(0.75)^t$ . Find the value of the computer after 9 years.

- a \$181.61
- b \$322.86
- c \$242.15
- d \$29,025.00

Question 13 (1 point)

Solve the problem.

The half-life of a certain radioactive substance is 20 years. Suppose that at time  $t = 0$ , there are 30 g of the substance. Then after  $t$  years, the number of grams of the substance remaining will be  $N(t) = 30(1.2)^{t/20}$ . How many grams of the substance will remain after 80 years?

- a 0.47 g
- b 0.23 g
- c 1.88 g
- d 0.94 g

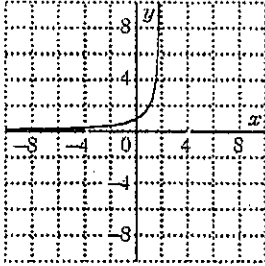
Question 14 (1 point)

Use the compound interest formula  $A = P \left(1 + \frac{r}{n}\right)^{nt}$  to solve.

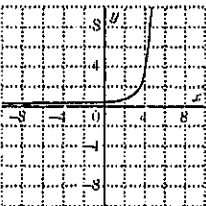
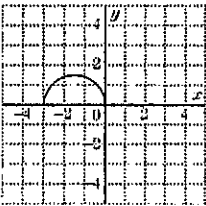
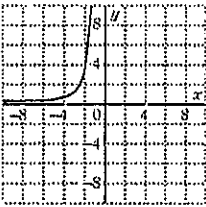
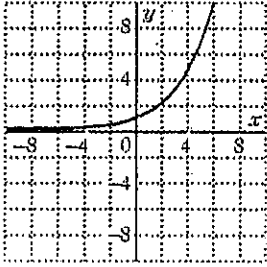
Find the accumulated value of an investment of \$8000 at 5.25% compounded annually for 17 years.

- a \$18,140.27
- b \$15,140.00
- c \$19,092.63
- d \$14,720.00

Question 15 (1 point)



The graph of  $y = 4^x$  is given. Which is the graph of  $y = 4^{x+3}$ ?



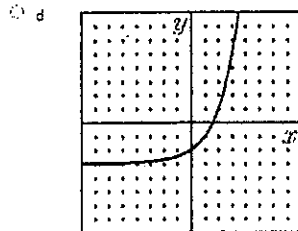
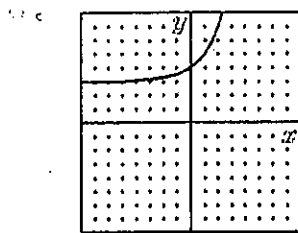
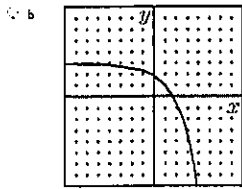
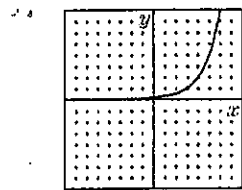
Question 16 (1 point)

To slide the graph of the equation  $y = 3^x$  two units right, the equation is altered. What is the new equation?

- a  $y = 3^{x-2}$
- b  $y = 3^x + 2$
- c  $y = 3^{x+2} + 2$
- d  $y = 3^x - 2$

Question 17 (1 point)

Which one of the following sketches is a reasonable graph of  $y = 2^x + 3$ ?



Question 18 (1 point)

What is the equation of the asymptote of  $y = 3^{x-5}$ ?

- a  $x = 5$
- b  $y = 0$
- c  $x = 0$
- d  $y = 5$

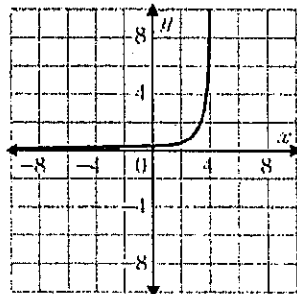
Question 19 (1 point)

Which of the following is an asymptote for the graph of  $y = 2^{x-1} + 3$ ?

- a  $y = 3$
- b  $y = 1$
- c  $x = 1$
- d  $y = 0$

Question 20 (1 point)

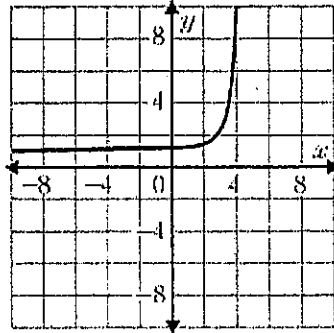
Consider the graph of the function  $y = 3^{2(x-3)}$ . Identify the domain and range of the function.



- a domain: all real numbers; range: all real numbers
- b domain:  $x < 5$ ; range: all real numbers
- c domain: all real numbers; range:  $y > 0$
- d domain:  $x < 6$ ; range:  $y > 0$

Question 21 (1 point)

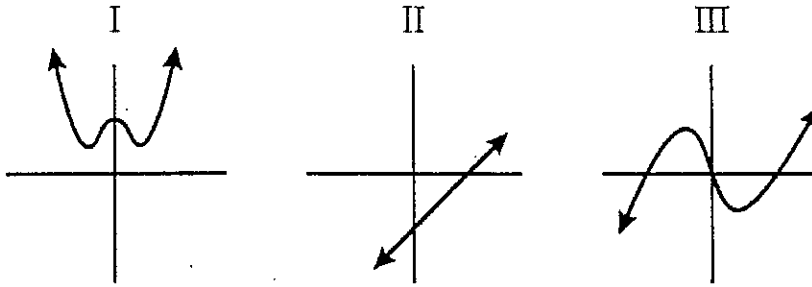
Consider the graph of the function  $y = 3^{2(x-3)} + 1$ . Identify the domain and range of the function.



- a domain:  $x > 1$ ; range:  $y > 1$
- b domain:  $x < 3$ ; range: all real numbers
- c domain: all real numbers; range:  $y > 1$
- d domain: all real numbers; range: all real numbers

Question 22 (1 point)

Of the three functions shown, which are neither odd nor even?



- a. II only
- b. I only
- c. III only
- d. II and III

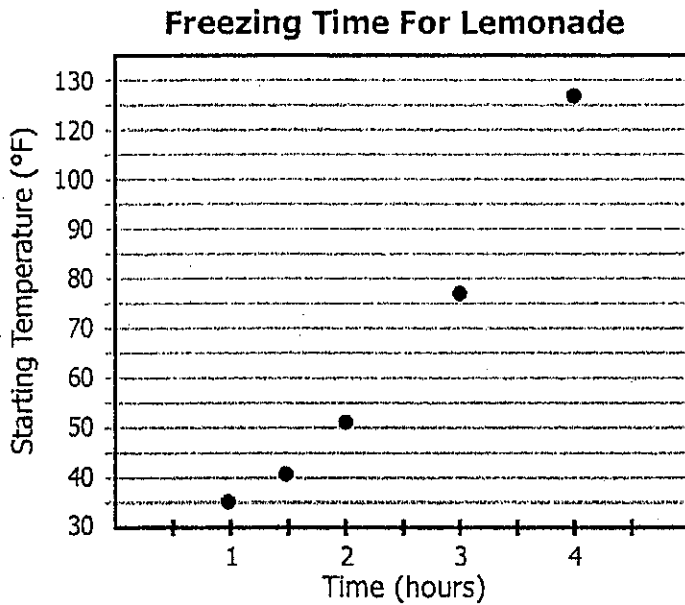
Question 23 (1 point)

What is the average rate of change for  $f(z) = -2z^2 + 4z - 3$  over the interval  $[-1, 4]$ ?

- a. 0
- b. 3
- c. -2
- d. -7

Question 24 (1 point)

Eleanor is conducting an experiment. She starts with 5 samples of lemonade at different temperatures. Then, she recorded how long it took each sample to freeze solid. The graph shows her results.



What is the average rate of change for the the experiment?  
Round to the nearest whole number.

- a 28° F/hour
- b 37° F/hour
- c 31° F/hour
- d 24° F/hour



Question 25 (1 point)

What type of function has the possibility of no  $x$ -intercepts?

- I. linear
  - II. quadratic
  - III. absolute value
- a. I only
- b. III only
- c. II only
- d. I, II, and III

Question 26 (1 point)

The graph of  $y = 3^x$ :

- a. does not intersect either axis
- b. intersects the  $x$ -axis only
- c. intersects both coordinate axes
- d. intersects the  $y$ -axis only

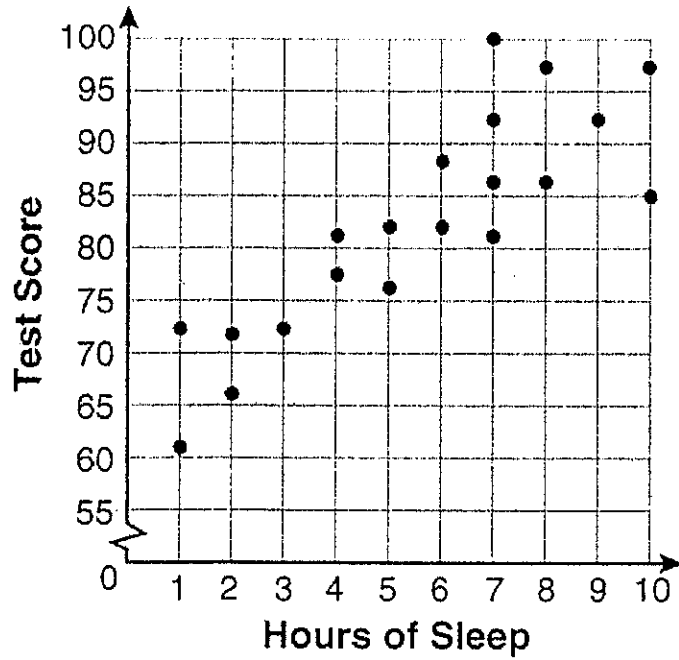
Question 27 (1 point)

Which of the following is an asymptote for the graph of  $y = 2^{1-x} - 3$ ?

- a.  $x = 1$
- b.  $y = -3$
- c.  $y = 1$
- d.  $x = 0$

Question 28 (1 point)

What is the relationship between the independent and dependent variables in the scatter plot shown below?



- a positive correlation
- b negative correlation
- c no correlation
- d undefined correlation

Question 29 (1 point)

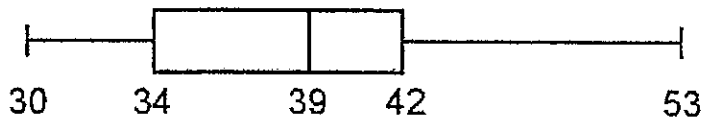
The relationship of a woman's shoe size and length of a woman's foot, in inches, is given in the accompanying table.

Women's Shoe Size	5	6	7	8
Foot Length (in)	9.00	9.25	9.50	9.75

The linear correlation coefficient for this relationship is

- a 1
- b 0
- c -1
- d 0.5

Question 30



In the box-and-whisker plot above, what is the spread of the data (interquartile range)?

- a 19
- b 12
- c 8
- d 23

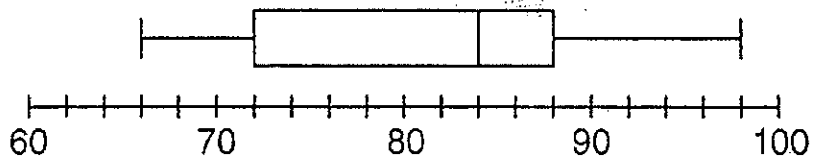
Question 31

As the number of hours of watching TV increase, the scores students received on tests decrease. Is this an example of causation?

- a this is an example of correlation not causation
- b yes
- c no
- d cannot tell

Question 32 (1 point)

The box-and-whisker plot below represents the math test scores of 20 students.



What percentage of the test scores are *less than* 72?

- a 50
- b 75
- c 100
- d 25

Question 33 (1 point)

In the table, which interval contains the upper quartile?

<i>Interval</i>	<i>Frequency</i>
90–100	3
81–90	5
71–80	4
61–70	5
51–60	3

- a 71–80
- b 81–90
- c 91–100
- d 51–60

Question 34 (1 point)

The test scores for 10 students in Ms. Sampson's homeroom were 61, 67, 81, 83, 87, 88, 89, 90, 98, and 100. Which frequency table is accurate for this set of data?

a

Interval	Frequency
61-70	2
71-80	2
81-90	8
91-100	10

b

Interval	Frequency
61-70	2
71-80	0
81-90	6
91-100	2

c

Interval	Frequency
61-70	2
71-80	2
81-90	7
91-100	10

d

Interval	Frequency
61-70	2
71-80	0
81-90	8
91-100	10

Question 35 (1 point)

What is the mode of the data shown in the table?

Measure $x_i$	Frequency $f_i$
5	3
12	2
13	5
18	4

- a 51.5
- b 13
- c 12
- d 12.5

Question 36 (1 point)

Jorge made the accompanying stem-and-leaf plot of the weights, in pounds, of each member of the wrestling team he was coaching. What is the mode of the weights?

Stem	Leaf
10	9
11	
12	3 8
13	2 4 4 6 8
14	1 3 5 5 9
15	2 3 7 7 9
16	1 3 7 8 8 8 9
17	3 8

Key: 16 | 1 = 161

- a. 152
- b. 145
- c. 150
- d. 168

Question 37 (1 point)

The accompanying stem-and-leaf plot represents Ben's test scores this year.

6		5	8				
7		2	3	3	3	3	9
8		1	3	3	6	7	
9		6	9	9			

Key: 7 | 2 = 72

What is the median score for this set of data?

- a 73
- b 79
- c 80
- d 81

Question 38 (1 point)

What is the median for the following set of data?

2, 7, 5, 4, 7, 2, 7

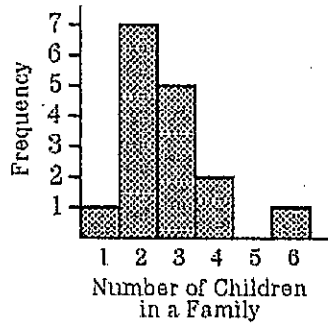
- a  $4\frac{6}{7}$
- b 4
- c 5
- d 7



Question 39 (1 point)

The accompanying histogram shows the distribution of the number of children in the families of the students in a ninth-grade class.

The mode of the set of data in the histogram is



- a 3
- b 7
- c 5
- d 2

Question 40 (1 point)

The following back-to-back stem-and-leaf plot shows the cost of men's and women's shoes at a local store.

Cost of Shoes		
Women's		Men's
	6	9 9
7 6 3	7	2 2 3 4 9
6 4 4 4	8	1 3 4 4 6 6 7
9 9 4 3 2 2	9	0 1 2 3 3 5 7
7 4 3 2	10	0 1 1 3 3 3 5 7 7 9
4	11	6
8 7 5 3 3 3 3 2 1	12	8
7 2	13	0
4 3	14	
0	15	0
9 3	16	
8 7	17	
3   14 represents 143		14   3 represents 143

What costs can 16 | 9 represent?

- I. \$169
- II. \$916
- III. \$1690

- a I and II only
- b I only
- c I and III only
- d I, II and III

Name \_\_\_\_\_

Packet #2 - Algebra I - Average / Honors

Assignment- Geometric Sequences, Exponential Equations, Growth/Decay, Compound Interest, and Half-Life, Characteristics of Exponential Equations, and Statistics

	A	B	C	D		A	B	C	D
1.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	21.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	22.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	23.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	24.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	25.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	26.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	27.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	28.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	29.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	30.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	31.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	32.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	33.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	34.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	35.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	36.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	37.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	38.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	39.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	40.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

