MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

The argument given or described involves some kind of fallacy. Identify the fallacy.

1) We must limit immigration to the United States in order to sustain the prosperous economy. A strong economy is vital to the health and wealth of the American people and the future of our children.
   A) Straw man
   B) False cause
   C) Appeal to force
   D) Diversion (red herring)  
   1) D

2) If Proposition Q fails, your children won't have good schools.
   A) Diversion (red herring)
   B) Hasty generalization
   C) Appeal to emotion
   D) Appeal to ignorance
   2) C

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

Determine whether the statement is true or false.

3) If horses have six legs, then Benjamin Franklin was the first president of the United States.
   3) F

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Make a truth table for the given statement. The letters p, q, r, s represent propositions.

4) p or q
   A) 
   B) 
   C) 
   D) 
   4) D

Write the converse, inverse, or contrapositive of the proposition, as indicated.

5) If the alarm beeps every thirty seconds, then you have to replace the battery. (converse)
   A) If you have to replace the battery, then the alarm beeps every thirty seconds.
   B) If you have to replace the battery, then the alarm does not beep every thirty seconds.
   C) If you do not have to replace the battery, then the alarm does not beep every thirty seconds.
   D) If the alarm does not beep every thirty seconds, then you do not have to replace the battery.
   5) A

Write the negation of the proposition.

6) She earns more than me.
   A) She does not earn more than me.
   B) She does not earn less than me.
   C) She earns less than me.
   D) She earns the same as me.
   6) A

Determine whether the statement is a proposition.

7) Go fly a kite.
   A) Not a proposition
   B) Proposition
   7) A
State whether or is being used in the exclusive or inclusive sense in the given statement.
8) The prize is a new car or $10,000 cash.
   A) Inclusive
   B) Exclusive

Consider the sets natural numbers, whole numbers, integers, rational numbers, and real numbers. Identify from the list the simplest set that describes the number given.
9) \(-84\)
   A) Real numbers
   B) Whole numbers
   C) Natural numbers
   D) Integers

10) \(-3\pi\)
   A) Real numbers
   B) Whole numbers
   C) Natural numbers
   D) Rational numbers

Solve the problem.
11) The following Venn diagram describes the cars on a used car lot. Use it to determine how many cars on the lot are not red.

```
Cars

Ford

Red

20

3

7

35

A) 38
B) 55
C) 58
D) 35
```

12) The following Venn diagram describes the optional features ordered by new telephone customers in a certain region. Use it to determine how many customers did not order caller ID.

```
Optional features

Caller ID

Call waiting

77

36

40

27

A) 76
B) 77
C) 67
D) 103
```
Evaluate the validity of the chain of conditionals.

13) Premise: If you loved me, then you would buy me a new car.
    Premise: If you wanted me to be happy, then you would buy me a new car.
    Conclusion: If you loved me, then you would want me to be happy.
    (A) Invalid
    (B) Valid

14) Premise: If I take a shower, I use soap.
    Premise: If I use soap, my skin becomes dry.
    Conclusion: If I take a shower, my skin becomes dry.
    (A) Valid
    (B) Invalid

Identify the units you would expect for the given quantity.

15) The price of pudding, found by dividing its cost in dollars by its weight in ounces.
    (A) ounces per dollar
    (B) dollars per ounce
    (C) dollar-ounces
    (D) ounce-dollars

Use units to help you answer the question. Round your answer, if appropriate.

16) Assume that you breathe once every 10 seconds. How many breaths do you take in 3 weeks?
    (A) 181,440
    (B) 260,480
    (C) 25,920
    (D) 3024

\[ \text{No. of breaths} = \frac{3 \times 7 \times 24 \times 3600}{10} = 181,440 \text{ breaths} \]

Use the following table of exchange rates to solve the problem.

<table>
<thead>
<tr>
<th>Currency</th>
<th>Dollars per Foreign</th>
<th>Foreign per Dollar</th>
</tr>
</thead>
<tbody>
<tr>
<td>British pound</td>
<td>1.678</td>
<td>0.5958</td>
</tr>
<tr>
<td>Canadian dollar</td>
<td>0.7483</td>
<td>1.336</td>
</tr>
<tr>
<td>European euro</td>
<td>1.169</td>
<td>0.8554</td>
</tr>
<tr>
<td>Japanese yen</td>
<td>0.008482</td>
<td>117.9</td>
</tr>
<tr>
<td>Mexican peso</td>
<td>0.0943</td>
<td>10.6045</td>
</tr>
</tbody>
</table>

Round your answer, if appropriate.

17) A fresh juice stand in Montreal sells a large glass of orange juice for 4.20 Canadian dollars. If you buy 4 glasses, how much have you spent in (U.S.) dollars?
    (A) $14.37
    (B) $12.57
    (C) $22.44
    (D) $19.64

\[ \text{Cost} = 4 \times 4.20 \times 0.7483 = $12.57 \]

Convert the common fraction into decimal form. If necessary, round to the nearest thousandth.

18) \[ \frac{476}{68} \]
    (A) 6
    (B) 6.8
    (C) 7
    (D) 8

Solve the problem.

19) A swimming pool 2 meters deep, 11 meters long, and 8 meters wide is filled with water. What volume of water does the pool contain?
    (A) 88 m²
    (B) 16 m²
    (C) 176 m³
    (D) 197 m³

\[ \text{Volume} = 11 \times 8 \times 2 = 176 \text{ m}^3 \]
Identify the units you would expect for the given quantity.

20) A speed found by dividing a distance measured in meters by a time measured in seconds.
   A) meter-seconds  B) square meters  C) meters per second  D) seconds per meter

Write as a common fraction.

21) 7.2
   A) $\frac{27}{10}$  B) $\frac{18}{25}$  C) $\frac{27}{100}$  D) $\frac{36}{5}$

Evaluate.

22) $\frac{1}{3} - \frac{1}{6} = \frac{2 - 1}{6} = \frac{1}{6}$
   A) $-\frac{1}{3}$  B) $-\frac{1}{6}$  C) $\frac{1}{3}$  D) $\frac{1}{6}$

Provide an appropriate response.

23) What is the general form of the compound interest formula for interest paid once a year?
   A) $A = P \times (1 + APR)^Y$  B) $A = P - APR \times Y$  C) $A = P \times APR^Y$  D) $A = P \times APR$

24) True or False? If you deposit $7,000 in an investment account today, it can double in value to $14,000 in just a couple decades even at a relatively low simple interest rate (6-8%).
   A) True  B) False

Answer the question.

25) Suppose you start saving today for a $8000 down payment that you plan to make on a condo in 4 years. Assume that you make no deposits into the account after your initial deposit. The account has quarterly compounding and an APR of 6%. What would you need to deposit now to reach your $8000 goal in 4 years?
   A) $6304.25  B) $5969.40  C) $6893.39  D) $5893.39

Solve the equation for the unknown quantity.

26) $10r + 10 = 60$
   A) 4  B) 40  C) 5  D) 44

   $10r = 50$  $r = 5$
Find the annual percentage yield (APY).

27) A bank offers an APR of 4.2% compounded monthly.
   A) 8.56%  B) 0.35%  C) 4.28%  D) 0.70%

\[ APY = \left(1 + \frac{r}{n}\right)^n - 1 \]

\[ = \left(1 + \frac{0.042}{12}\right)^{12} - 1 = 0.0419 \]

Use the compound interest formula for continuous compounding to determine the accumulated balance after the stated period.

28) A $34,863 deposit in an account with an APR of 9% compounded continuously for 10 years.
   (A) $85,749.14  B) $77,582.38  C) $94,754.50  D) $85,739.62

\[ A = Pe^{rt} \]

\[ = 34,863 \cdot e^{0.09 \cdot 10} \]

\[ = 85,749.14 \]