

Name: _____

Ms. Torres

Per: ____

A.P. STATISTICS

Summer Statistics- Readiness Packet

Instructions:

1. This summer review packet contains worksheets reviewing topics necessary for Statistics. Topics are from
 - Arithmetic (whole numbers, decimals, fractions, percent)
 - Pre-algebra (integers, exponents, order of operations, roots)
 - Algebra 1 (evaluating expressions)
 - Basic Probability (previously-covered)
 - Basic Statistics (previously-covered)
2. This summer review packet is **due on the first day of class** of the fall semester, counts as homework, and **is required to be admitted into the A.P. Statistics class.**
3. You may ONLY use a calculator on the last worksheet (entitled "Statistics").
(Show all work whenever there is space; otherwise, no credit.)
4. Estimated time to do all of this work is 3 to 4 hours.
5. We will start with Statistics on the first day of school.

Materials required for fall semester

On the first day of school you will need the following materials:

1. Textbook: *The practice of Statistics for AP**, 4th Edition (2012) by Starnes, Yates, & Moore (& Josh Tabor) ISBN-13: 978-1-4292-6258-3 (is blue and orange)
2. Calculator: A non-intercommunicating scientific calculator (graphing capability required) (such as a TI-84)
3. Binder(s) for notes and homework assignments (organized and with extra paper)
4. 2 pencils & an eraser (no pen)

BASIC SKILLS
REVIEW

Name: _____

Per: _____

$$\begin{array}{r} \textcircled{1} \quad 1232 \\ + \quad 56 \\ \hline \end{array}$$

$$\begin{array}{r} \textcircled{2} \quad 1232 \\ - \quad 56 \\ \hline \end{array}$$

$$\begin{array}{r} \textcircled{3} \quad 1232 \\ \times \quad 56 \\ \hline \end{array}$$

$$\textcircled{4} \quad 56 \overline{)1232}$$

+, -
Decimals

Name: _____

Per: _____

Add. Be sure decimal points line up.

Suma. Asegúrate que los puntos decimales están en línea

$$\begin{array}{r} \textcircled{1} 2.39 \\ + 1.87 \\ \hline \end{array} \quad \begin{array}{r} \textcircled{2} 4.73 \\ + 3.3 \\ \hline \end{array} \quad \begin{array}{r} \textcircled{3} 2.19 \\ + 9.87 \\ \hline \end{array} \quad \begin{array}{r} \textcircled{4} 7.1 \\ + 8.27 \\ \hline \end{array} \quad \begin{array}{r} \textcircled{5} 13.91 \\ + 89.44 \\ \hline \end{array}$$

$$\begin{array}{r} \textcircled{6} 4.73 + 1.87 \\ = 4.73 \\ + 1.87 \\ \hline \end{array} \quad \begin{array}{r} \textcircled{7} 9.87 + 3.3 \\ + \\ \hline \end{array} \quad \begin{array}{r} \textcircled{8} 14.2 + 8.27 \\ + \\ \hline \end{array}$$

Subtract. Be sure decimal points line up.

Resta. Asegúrate que los puntos decimales están en línea

$$\begin{array}{r} \textcircled{1} 2.39 \\ - 1.87 \\ \hline \end{array} \quad \begin{array}{r} \textcircled{2} 4.73 \\ - 3.3 \\ \hline \end{array} \quad \begin{array}{r} \textcircled{3} 9.87 \\ - 2.19 \\ \hline \end{array} \quad \begin{array}{r} \textcircled{4} 8.27 \\ - 7.1 \\ \hline \end{array} \quad \begin{array}{r} \textcircled{5} 89.44 \\ - 13.91 \\ \hline \end{array}$$

$$\begin{array}{r} \textcircled{6} 4.73 - 1.87 \\ - \\ \hline \end{array} \quad \begin{array}{r} \textcircled{7} 9.87 - 3.3 \\ - \\ \hline \end{array} \quad \begin{array}{r} \textcircled{8} 14.2 - 8.27 \\ - \\ \hline \end{array}$$

X Decimals

Name: _____
Per: _____

Multiply.

Number of decimal places in answer = Number of decimal places in problem. (COUNT!)

(It isn't necessary to line up decimal points).

$$\begin{array}{r} \textcircled{1} .2 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} \textcircled{2} 5 \\ \times .9 \\ \hline \end{array}$$

$$\begin{array}{r} \textcircled{3} 6 \\ \times .7 \\ \hline \end{array}$$

$$\begin{array}{r} \textcircled{4} .8 \\ \times .3 \\ \hline \end{array}$$

$$\begin{array}{r} \textcircled{5} .5 \\ \times .3 \\ \hline \end{array}$$

$$\begin{array}{r} \textcircled{6} .12 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} \textcircled{7} .14 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} \textcircled{8} .19 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} \textcircled{9} .17 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} \textcircled{10} .16 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} \textcircled{11} .123 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} \textcircled{12} .431 \\ \times .5 \\ \hline \end{array}$$

$$\begin{array}{r} \textcircled{13} 73.9 \\ \times .7 \\ \hline \end{array}$$

$$\begin{array}{r} \textcircled{14} 5.10 \\ \times .4 \\ \hline \end{array}$$

$$\begin{array}{r} \textcircled{15} 1.710 \\ \times .6 \\ \hline \end{array}$$

$$\begin{array}{r} \textcircled{16} .23 \\ \times 6.4 \\ \hline \end{array}$$

$$\begin{array}{r} \textcircled{17} 1.3 \\ \times .17 \\ \hline \end{array}$$

$$\begin{array}{r} \textcircled{18} .51 \\ \times .22 \\ \hline \end{array}$$

$$\begin{array}{r} \textcircled{19} .63 \\ \times 3.9 \\ \hline \end{array}$$

$$\begin{array}{r} \textcircled{20} 9.8 \\ \times .14 \\ \hline \end{array}$$

Decimals

✓
Divide. a) Move decimal point in divisor to division bar. (→)
b) Move decimal point in dividend same # of places. (→)
(Show arrows!!)

① $3 \overline{) 9.3}$ ② $2 \overline{) 6}$ ③ $5 \overline{) 10}$ ④ $4 \overline{) 12}$

$$\begin{array}{r} 3 \overline{) 9.3} \\ \underline{-9} \\ 0 \end{array}$$

⑤ $3 \overline{) 12.4}$ ⑥ $4 \overline{) 20}$ ⑦ $7 \overline{) 35}$ ⑧ $2 \overline{) 18}$

$$\begin{array}{r} 3 \overline{) 12.4} \\ \underline{-12} \\ 0 \end{array}$$

⑨ $3 \overline{) 51}$ ⑩ $4 \overline{) 72}$ ⑪ $7 \overline{) 84}$ ⑫ $5 \overline{) 25}$

⑬ $9 \overline{) 81}$ ⑭ $8 \overline{) 96}$ ⑮ $6 \overline{) 78}$ ⑯ $7 \overline{) 35}$

⑰ $0.03 \overline{) 0.51}$ ⑱ $0.04 \overline{) 0.20}$ ⑲ $0.07 \overline{) 0.84}$ ⑳ $0.09 \overline{) 0.81}$

㉑ $0.05 \overline{) 0.515}$ ㉒ $0.06 \overline{) 0.216}$ ㉓ $0.14 \overline{) 0.574}$ ㉔ $0.25 \overline{) 1}$

Fraction Basics I

Name: _____
Per: _____

Make the indicated equivalent fraction.

① $\frac{1}{2} \stackrel{\times 2}{=} \frac{2}{4}$ ② $\frac{1}{2} = \frac{\quad}{8}$ ③ $\frac{1}{4} = \frac{\quad}{8}$ ④ $\frac{2}{3} = \frac{\quad}{12}$

Reduce each fraction completely.

⑤ $\frac{2}{4} \stackrel{\div 2}{=} \frac{1}{2}$ ⑥ $\frac{4}{8} = \frac{\quad}{\quad}$ ⑦ $\frac{2}{8} = \frac{\quad}{\quad}$ ⑧ $\frac{8}{12} = \frac{\quad}{\quad}$

Convert to an improper fraction.

⑨ $1\frac{1}{2} = \frac{\quad}{\quad}$ ⑩ $2\frac{1}{4} = \frac{\quad}{\quad}$ ⑪ $3\frac{1}{3} = \frac{\quad}{\quad}$ ⑫ $4\frac{5}{8} = \frac{\quad}{\quad}$

Convert to a mixed number. (\div)

⑬ $\frac{3}{2}$ ⑭ $\frac{9}{4}$ ⑮ $\frac{16}{3}$ ⑯ $\frac{31}{8}$

Add.

$$\begin{array}{r} \textcircled{17} \frac{1}{3} \\ + \frac{1}{3} \\ \hline \end{array}$$

$$\begin{array}{r} \textcircled{18} \frac{1}{4} \\ + \frac{1}{4} \\ \hline \end{array}$$

$$\begin{array}{r} \textcircled{19} \frac{1}{5} \\ + \frac{2}{5} \\ \hline \end{array}$$

$$\begin{array}{r} \textcircled{20} \frac{3}{8} \\ + \frac{4}{8} \\ \hline \end{array}$$

Subtract.

$$\begin{array}{r} \textcircled{21} \frac{1}{3} \\ - \frac{1}{3} \\ \hline \end{array}$$

$$\begin{array}{r} \textcircled{22} \frac{2}{4} \\ - \frac{1}{4} \\ \hline \end{array}$$

$$\begin{array}{r} \textcircled{23} \frac{3}{5} \\ - \frac{1}{5} \\ \hline \end{array}$$

$$\begin{array}{r} \textcircled{24} \frac{7}{8} \\ - \frac{4}{8} \\ \hline \end{array}$$

+ , - ⇒ C.D. Name: _____
Per: _____

Fractions I

Add. Denominators do not change.

① $\frac{2}{4} + \frac{1}{4} = \frac{3}{4}$ ② $\frac{1}{3} + \frac{1}{3}$ ③ $\frac{2}{5} + \frac{1}{5}$ ④ $\frac{5}{8} + \frac{2}{8}$

⑤ $\frac{5}{7} + \frac{1}{7}$ ⑥ $\frac{5}{9} + \frac{2}{9}$ ⑦ $\frac{7}{10} + \frac{2}{10}$ ⑧ $\frac{4}{11} + \frac{3}{11}$

⑨ $\frac{5}{12} + \frac{3}{12}$ ⑩ $\frac{8}{15} + \frac{5}{15}$ ⑪ $\frac{7}{18} + \frac{4}{18}$ ⑫ $\frac{17}{25} + \frac{4}{25}$

Subtract. Denominators do not change.

① $\frac{2}{4} - \frac{1}{4} = \frac{1}{4}$ ② $\frac{1}{3} - \frac{1}{3}$ ③ $\frac{2}{5} - \frac{1}{5}$ ④ $\frac{5}{8} - \frac{2}{8}$

⑤ $\frac{5}{7} - \frac{1}{7}$ ⑥ $\frac{5}{9} - \frac{2}{9}$ ⑦ $\frac{7}{10} - \frac{2}{10}$ ⑧ $\frac{4}{11} - \frac{3}{11}$

⑨ $\frac{5}{12} - \frac{3}{12}$ ⑩ $\frac{8}{15} - \frac{5}{15}$ ⑪ $\frac{7}{18} - \frac{4}{18}$ ⑫ $\frac{17}{25} - \frac{4}{25}$

+ , - \Rightarrow C.P.! Name: _____
Per: _____

Fractions II

Add. Utilize equivalent fractions to first get same denominator

① $\frac{1 \times 2}{2 \times 2} + \frac{1}{4}$ ② $\frac{1}{3} + \frac{1}{5}$ ③ $\frac{1}{2} + \frac{1}{8}$ ④ $\frac{4}{5} + \frac{1}{2}$
 $= \frac{2}{4} + \frac{1}{4} = \boxed{\frac{3}{4}}$

⑤ $\frac{3}{4} + \frac{1}{2}$ ⑥ $\frac{5}{8} + \frac{1}{2}$ ⑦ $\frac{8}{9} + \frac{1}{3}$ ⑧ $\frac{7}{10} + \frac{1}{3}$

⑨ $1\frac{2}{3} + \frac{2}{3}$ ⑩ $1\frac{1}{2} + \frac{3}{4}$ ⑪ $2\frac{1}{2} + 1\frac{5}{8}$ ⑫ $3\frac{5}{8} + 1\frac{7}{16}$

Subtract. Utilize equivalent fractions to first get same denominators.

① $\frac{1}{2} - \frac{1}{4}$ ② $\frac{1}{3} - \frac{1}{5}$ ③ $\frac{1}{2} - \frac{1}{8}$ ④ $\frac{4}{5} - \frac{1}{2}$

⑤ $\frac{3}{4} - \frac{1}{2}$ ⑥ $\frac{5}{8} - \frac{1}{2}$ ⑦ $\frac{8}{9} - \frac{1}{3}$ ⑧ $\frac{7}{10} - \frac{1}{3}$

⑨ $1\frac{1}{3} - \frac{2}{3}$ ⑩ $1\frac{1}{2} - \frac{3}{4}$ ⑪ $2\frac{1}{2} - 1\frac{5}{8}$ ⑫ $3\frac{5}{8} - 1\frac{7}{16}$

X, ÷
Fractions

Name: _____

Per: _____

Multiply.

- ① $\frac{3}{4} \times \frac{1}{2} = \frac{3}{8}$ ② $\frac{1}{3} \times \frac{1}{5}$ ③ $\frac{1}{8} \times \frac{1}{2}$ ④ $\frac{4}{5} \times \frac{1}{2}$
⑤ $\frac{3}{4} \times \frac{1}{3}$ ⑥ $\frac{5}{8} \times \frac{1}{4}$ ⑦ $\frac{8}{9} \times \frac{1}{3}$ ⑧ $\frac{7}{10} \times \frac{1}{8}$
⑨ $\frac{7}{10} \times \frac{2}{5}$ ⑩ $\frac{3}{5} \times \frac{7}{8}$ ⑪ $\frac{1}{2} \times \frac{1}{4}$ ⑫ $\frac{1}{4} \times \frac{1}{4}$
⑬ $\frac{5}{6} \times \frac{1}{2} = \frac{5}{12}$ ⑭ $1\frac{2}{3} \times \frac{4}{5}$ ⑮ $1\frac{2}{5} \times 2\frac{1}{3}$ ⑯ $1\frac{3}{4} \times 3\frac{1}{2}$
 $= \frac{5}{6} \times \frac{3}{2} = \frac{15}{12}$

Divide.

- ① $\frac{3}{4} \div \frac{2}{3} = \frac{3}{4} \times \frac{3}{2} = \frac{9}{8}$ ② $\frac{1}{3} \div \frac{1}{5}$ ③ $\frac{1}{8} \div \frac{1}{2}$ ④ $\frac{4}{5} \div \frac{1}{2}$
⑤ $\frac{3}{4} \div \frac{1}{3}$ ⑥ $\frac{5}{8} \div \frac{1}{4}$ ⑦ $\frac{8}{9} \div \frac{1}{3}$ ⑧ $\frac{7}{10} \div \frac{1}{8}$
⑨ $\frac{7}{10} \div \frac{2}{5}$ ⑩ $\frac{3}{5} \div \frac{7}{8}$ ⑪ $\frac{1}{2} \div \frac{1}{4}$ ⑫ $\frac{1}{4} \div \frac{1}{4}$
⑬ $\frac{5}{6} \div 1\frac{1}{2}$ ⑭ $1\frac{2}{3} \div \frac{4}{5}$ ⑮ $1\frac{2}{5} \div 2\frac{1}{3}$ ⑯ $1\frac{3}{4} \div 3\frac{1}{2}$

Name: _____

Per: _____

FRACTION, DECIMAL, PERCENT EQUIVALENTS

SHOW ALL WORK ON BACK FOR CREDIT!

- ①
- ②
- ③
- ④
- ⑤
- ⑥
- ⑦
- ⑧
- ⑨
- ⑩
- ⑪
- ⑫
- ⑬
- ⑭
- ⑮
- ⑯
- ⑰
- ⑱
- ⑳

FRACTION	FRACTION AS HUNDREDTHS	DECIMAL	PERCENT
$1/2 =$	50 / 100	.50	50 %
$1/4 =$	25 / 100	.25	25 %
$3/4 =$			
$1/5 =$			
$2/5 =$			
$3/5 =$			
$4/5 =$			
$1/10 =$			
$3/10 =$			
$7/10 =$			
$9/10 =$			
$1/8 =$			
$3/8 =$			
$5/8 =$			
$7/8 =$			
$1/3 =$			
$2/3 =$			
$1/6 =$			
$5/6 =$			
$1 =$			

$$\textcircled{3} \frac{3 \cdot 25 = 75}{4 \cdot 25 = 100} \leftarrow \left(\times \right)$$

or

$$4 \overline{) 3.00} \leftarrow \left(\div \right)$$
$$\begin{array}{r} 75 \\ -28 \\ \hline 20 \\ -20 \\ \hline 0 \end{array}$$

$$\textcircled{4} \frac{1}{5} = \frac{\quad}{100}$$

$$5 \overline{) \quad}$$

$$\textcircled{5} \frac{2}{5} = \frac{\quad}{100}$$

$$5 \overline{) \quad}$$

$$\textcircled{6} \frac{3}{5} = \frac{\quad}{100}$$

$$5 \overline{) \quad}$$

$$\textcircled{7} \frac{4}{5} = \frac{\quad}{100}$$

$$5 \overline{) \quad}$$

$$\textcircled{8} \frac{1}{10} = \frac{\quad}{100}$$

$$10 \overline{) \quad}$$

$$\textcircled{9} \frac{2}{10} = \frac{\quad}{100}$$

$$10 \overline{) \quad}$$

$$\textcircled{10} \frac{7}{10} = \frac{\quad}{100}$$

$$10 \overline{) \quad}$$

$$\textcircled{11} \frac{9}{10} = \frac{\quad}{100}$$

$$10 \overline{) \quad}$$

$$\textcircled{12} \frac{1}{8} = \frac{\quad}{100}$$

$$8 \overline{) \quad}$$

$$\textcircled{13} \frac{3}{8} = \frac{\quad}{100}$$

$$8 \overline{) \quad}$$

$$\textcircled{14} \frac{5}{8} = \frac{\quad}{100}$$

$$8 \overline{) \quad}$$

$$\textcircled{15} \frac{7}{8} = \frac{\quad}{100}$$

$$8 \overline{) \quad}$$

$$\textcircled{16} \frac{1}{3} = \frac{\quad}{100}$$

$$3 \overline{) \quad}$$

$$\textcircled{17} \frac{2}{3} = \frac{\quad}{100}$$

$$3 \overline{) \quad}$$

$$\textcircled{18} \frac{1}{6} = \frac{\quad}{100}$$

$$6 \overline{) \quad}$$

$$\textcircled{19} \frac{5}{6} = \frac{\quad}{100}$$

$$6 \overline{) \quad}$$

$$\textcircled{20} 1 = \frac{\quad}{100}$$

INTEGER REVIEW

Name: _____

Per: _____

Hint: (+) = ↑, (-) = ↓.

Hint: Add Opposite.

① $(+8) + (+6) =$

⑥ $(+7) - (+5) =$

② $(-8) + (-6) =$

⑦ $(-7) - (-5) =$

③ $(+8) + (-6) =$

⑧ $(+7) - (-5) =$

④ $(-8) + (+6) =$

⑨ $(-7) - (+5) =$

⑤ $(-37) + (+24) =$

⑩ $(-37) - (-24) =$

⑪ $(+12) \times (+3) =$

⑬ $(+12) \div (+3) =$

⑫ $(-12) \times (-3) =$

⑭ $(-12) \div (-3) =$

⑬ $(+12) \times (-3) =$

⑮ $(+12) \div (-3) =$

⑭ $(-12) \times (+3) =$

⑯ $(-12) \div (-3) =$

⑮ $(+24) \times (-3) =$

⑰ $(-24) \div (+3) =$

Exponents

Name: _____

Per: _____

Exponents indicate repeated multiplication of a number times itself.

ex) $2^4 = \underline{2} \times \underline{2} \times \underline{2} \times \underline{2} = \boxed{16}$ (not $2 \times 4 = 8$).

Exponentiate.

① $3^2 = \boxed{}$

② $5^2 = \boxed{}$

③ $7^2 = \boxed{}$

④ $10^2 = \boxed{}$

⑤ $25^2 = \boxed{}$

⑥ $300^2 = \boxed{}$

⑦ $2^3 = \boxed{}$

⑧ $(-2)^3 = \boxed{}$

⑨ $3^3 = \boxed{}$

⑩ $(-5)^3 = \boxed{}$

⑪ $10^3 = \boxed{}$

⑫ $(-3)^4 = \boxed{}$

⑬ $2^5 = \boxed{}$

⑭ $4^3 = \boxed{}$

⑮ $2^6 = \boxed{}$

⑯ $(\frac{1}{2})^2 = \boxed{}$

⑰ $(\frac{-1}{3})^2 = \boxed{}$

⑱ $(-\frac{1}{2})^3 = \boxed{}$

⑲ $10^{10} = \boxed{}$

⑳ $100^5 = \boxed{}$

Name: _____

Per: _____

Order of Operations VII

$+$, $-$, \times , \div must be done in the following order:

①	<u>P</u> arentheses	(innermost first)
②	<u>E</u> xponents	(L \rightarrow R)
③	<u>M</u> ultiplication & <u>D</u> ivision	(L \rightarrow R)
④	<u>A</u> ddition & <u>S</u> ubtraction	(L \rightarrow R).

(If not, you will get the wrong answer)!

① $2 + 3 \times 9 - 4$

② $3 \times 5 + 4 \div 2$

③ $7 + 9 \times 3 \div 3 - 1$
= \square

④ $2 + 3^2 - 1 \times 5$
= \square

⑤ $(5 + 3) \times 2 + 3^2$
= \square

⑥ $(6 + 2^2) - 4 \times 2$
= \square

⑦ $5^2 + 9 \times (3) - 1$
= $\boxed{25}$

⑧ $(3^2 + 6) \div 3 \times 5 - 1$
= $\boxed{2}$

= $\boxed{51}$

= $\boxed{24}$

Order of Operations IV

Make sure you get the following answers!

1) $42 - 9 \times 3 + 16$ **31** 2) $42 - 9 \times 3 + 16 \div 4$ **19**

3) $42 - (2 \times 3)^2 + 16 \div 4$ **10** 4) $42 - (2 + 3)^2 + 16 \div 4$ **21**

5) $42 - 2 \times 3^2 + 16 \div 4$ **28** 6) $42 - 2 \times (3^2 + 16) \div 5$ **32**

7) $42 - 2 \times 3^2 + (15 \div 5)$ **27** 8) $(42 - 2) \times 3 + 15 \div 5$ **123**

9) $[(42 - 2) \times 3 + 15] \div 5$ **27** 10) $(42 - 9) \times [(16 - 4) \div 3]$ **132**

11) $9^2 + 4 \div 2 - 7$ **76** 12) $(9^2 + 4) \div 5 - 7$ **10**

13) $(9^2 + 4) \div 5 + 3$ **20** 14) $[(9^2 + 4) \div 5 + 3] \div 5$ **4**

Roots

A root is a number that when multiplied by itself a certain number of times equals another number.

ex) $\sqrt[4]{16} = \boxed{2}$, because $\underbrace{2 \times 2 \times 2 \times 2}_{(4 \text{ times})} = 16$.

Calculate the root of each of the following.

① $\sqrt{9} = \boxed{}$

② $\sqrt{25} = \boxed{}$

③ $\sqrt{49} = \boxed{}$

④ $\sqrt{100} = \boxed{}$

⑤ $\sqrt{625} = \boxed{}$

⑥ $\sqrt{90,000} = \boxed{}$

⑦ $\sqrt[3]{8} = \boxed{}$

⑧ $\sqrt[3]{(-8)} = \boxed{}$

⑨ $\sqrt[3]{27} = \boxed{}$

⑩ $\sqrt[3]{(-125)} = \boxed{}$

⑪ $\sqrt[3]{1000} = \boxed{}$

⑫ $\sqrt[4]{81} = \boxed{}$

⑬ $\sqrt[5]{32} = \boxed{}$

⑭ $\sqrt[3]{64} = \boxed{}$

⑮ $\sqrt[6]{64} = \boxed{}$

⑯ $\sqrt{\frac{1}{4}} = \boxed{}$

⑰ $\sqrt[3]{\left(-\frac{1}{8}\right)} = \boxed{}$

⑱ $\sqrt[10]{10,000,000,000} = \boxed{}$

⑲ $\sqrt[5]{10,000,000,000} = \boxed{}$

⑳ $\sqrt[2]{10,000,000,000} = \boxed{}$

Evaluating Variable Expressions

Name: _____

Per. _____

Evaluate if $a = 3$ and $x = 5$.
Show all work below each problem.

$$\textcircled{1} a + x \\ = \quad = \quad \square$$

$$\textcircled{2} a + 2x \\ = \quad = \quad \square$$

$$\textcircled{3} (a)(x) \\ = \quad = \quad \square$$

$$\textcircled{4} (5a) \div (3x) \\ = \quad = \quad \square$$

$$\textcircled{5} a \div x \\ = \quad = \quad \square$$

$$\textcircled{6} x - a \\ = \quad = \quad \square$$

$$\textcircled{7} a - x \\ = \quad = \quad \square$$

$$\textcircled{8} 2a + 3x \\ = \quad = \quad \square$$

$$\textcircled{9} ax^2 \\ = \quad = \quad \square$$

$$\textcircled{10} (ax)^2 \\ = \quad = \quad \square$$

$$\textcircled{11} (a+x)^2 \\ = \quad = \quad \square$$

$$\textcircled{12} a + x^2 \\ = \quad = \quad \square$$

$$\textcircled{13} (x-a)^3 \\ = \quad = \quad \square$$

$$\textcircled{14} x^3 - a \\ = \quad = \quad \square$$

$$\textcircled{15} x^2 - a^2 \\ = \quad = \quad \square$$

$$\textcircled{16} a^3 + x^3 \\ = \quad = \quad \square$$

$$\textcircled{17} x^2 + 2ax + a^2 \\ = \quad = \quad \square$$

$$\textcircled{18} 2x^2 - 5a + x \\ = \quad = \quad \square$$

$$\textcircled{19} (2a + 3x)^2 + 7 \\ = \quad = \quad \square$$

$$\textcircled{20} 4a^3 + 5a^2x - 2ax^2 + 3x^3 \\ = \quad = \quad \square$$

Name: _____
Date: ___/___/___
Period: ___

Sample Spaces

Directions: Write out the sample space (list of all possible outcomes) for each of the following experiments.

Example: Flipping 2 coins.

$S =$ {HH, HT, TH, TT} ← (answer).

1). Flipping a coin, then rolling a die.

2). Flipping 3 coins.

3). Spinning the following spinner two times.
(R = Red, Y = Yellow, G = Green, B = Blue).



4). Rearranging the letters in "GAME".

5). Choosing an outfit from 2 pairs of pants (black, and green) and 3 shirts (red, white, and yellow).

6). Joe, Dan, and Maria finish a race.

Sample Spaces & Probability

Directions: Find the probability of each event by analyzing the sample space.

Example: Flipping 2 coins.

$$S = \{HH, HT, TH, TT\}$$

$$\mathcal{P}(\text{1 or more heads}) = \boxed{\frac{3}{4}} \longleftarrow (\text{answer}).$$

1). Flipping a coin, then rolling a die.

$\mathcal{P}(\text{heads and 1}) =$	—
$\mathcal{P}(\text{heads and even \#}) =$	—
$\mathcal{P}(\text{tails and odd \#}) =$	—
$\mathcal{P}(\text{tails}) =$	—

2). Flipping 3 coins.

$\mathcal{P}(\text{3 heads}) =$	—
$\mathcal{P}(\text{exactly 2 heads}) =$	—
$\mathcal{P}(\text{3 tails}) =$	—
$\mathcal{P}(\text{1 or more heads}) =$	—

3). Spinning the following spinner two times.
(R = Red, Y = Yellow, G = Green, B = Blue).



$\mathcal{P}(\text{red on 1}^{\text{st}} \text{ spin}) =$	—
$\mathcal{P}(\text{red twice}) =$	—
$\mathcal{P}(\text{blue, then green}) =$	—
$\mathcal{P}(\text{yellow twice}) =$	—

4). Rearranging the letters in "GAME".

$\mathcal{P}(\text{"GAME"}) =$	—
$\mathcal{P}(\text{1}^{\text{st}} \text{ letter is "G"}) =$	—
$\mathcal{P}(\text{"MEGA" or "GAME"}) =$	—
$\mathcal{P}(\text{1}^{\text{st}} \text{ letter is "G" and last is "E"}) =$	—

5). Choosing an outfit from 2 pairs of pants (black, and green) and 3 shirts (red, white, and yellow).

$\mathcal{P}(\text{black and red}) =$	—
$\mathcal{P}(\text{red shirt}) =$	—
$\mathcal{P}(\text{black, and red or white}) =$	—
$\mathcal{P}(\text{purple pants}) =$	—

6). Joe, Dan, and Maria finish a race.

$\mathcal{P}(\text{Joe finishes 1}^{\text{st}}) =$	—
$\mathcal{P}(\text{Dan is last}) =$	—
$\mathcal{P}(\text{Maria beats Joe}) =$	—
$\mathcal{P}(\text{Dan comes in 2}^{\text{nd}}) =$	—

Name: _____
Period: _____

Statistics

Definitions:

1. *Statistics*: Manipulations of numerical data.
2. *Set*: A collection (of numbers, for example).

Example Set:

2, 3, 3, 5, 8, 10, 11

Basic Definitions:

3. *Low*: The smallest number in a set. (Low = 2)
4. *High*: The biggest number in a set. (High = 11)
5. *Range*: The biggest number minus the smallest number. (Range = $11 - 2 = 9$)

Central Tendency Definitions:

6. *Mean ("Average")*: The single number that best represents a set of numbers.
It is calculated by:

$$\text{Average} = \frac{\text{Sum of Numbers}}{\text{Number of Numbers}} = \frac{2+3+3+5+8+10+11}{7} = \frac{42}{7} = 6$$

7. *Median*: The middle number. Put the numbers in order from lowest to highest and cross out the outside numbers until only the middle number remains.
2, 3, 3, 5, 8, 10, 11 (Median = 5)
8. *Mode*: The number that repeats the most. (Mode = 3)

Deviation Definitions:

9. *Deviation*: The difference between two numbers (i.e. between 2 and 6 it is 4).
10. *Mean (/Average) Deviation*: The average from the average; the average of all the deviations of each number from the average (here, from 6).
(Note: You must calculate the average first).

$$\text{Average Deviation} = \frac{\text{Sum of Deviations}}{\text{Number of Deviations}} = \frac{4+3+3+1+2+4+5}{7} = \frac{22}{7} \approx 3$$

So now, with this information, you could say that the average is 6 ± 3 .

Other Definitions:

11. *Distribution*: The way in which the data numbers are ordered and divided up.
12. *Histogram*: A multiple-bar bar graph that shows the distribution.

Practice Problems

Directions: Try these problems for practice.

1. Find the average of the numbers 15, 12, 10, and 19.
2. Find the average of the numbers 42, 51, 63, 21, 5, 102, and 17.
3. Find the average of the numbers 23, 31, and 762.
4. Find the average of the numbers 11, 27, 13, 17, 6, 2, 15, 23, 12, and 14.
5. Find the average of the test scores: 9, 9, 7, 6, and 8.
6. Rainfall in Dry Valley, California was 70 centimeters last year and only 2 centimeters the year before. What was the average rainfall for the past 2 years?
7. The ages of the parrots are 21, 26, 27, 24, 22, and 48 years. What is their average age?
8. In a given week a student worked at the Golden Arches Restaurant for the following hours each day:
Monday - 2 hrs, Tuesday - 3 hrs, Wednesday - 2 hrs, Thursday - 3 hrs,
Friday - 2 hrs, and Saturday - 6 hrs.
What average amount of time does the student work per day?
9. Five members of the staff here at school, earned the following amounts of money this week: \$647, \$705, \$1205, \$349, \$409. What is their average salary?
10. Seven students chew and count as they eat Tootsie rolls. They find that it takes them 20, 14, 93, 20, 83, 83, and 20 chews in order to swallow.
 - a). What is the average number of chews?
 - b). What is the mode?
 - c). What is the median?
11. A sample of data is 6, 1, 1, 5, 2, 9, and 4.
 - a). Find the low, high, and range of the sample.
 - b). Find the mean, median, and mode of the sample.
 - c). Find the average deviation [from the average] of the sample.
 - d). Draw a histogram (multiple-bar bar graph) below for the number of times each number 0 to 10 occurs in the sample.

0 1 2 3 4 5 6 7 8 9 10