SHOW ALL YOUR WORK. Name _____

Fractions and Decimals

1. $3\frac{3}{4}$ is equivalent to:
   a) $\frac{9}{4}$
   b) $\frac{10}{4}$
   c) $\frac{12}{4}$
   d) $\frac{15}{4}$

2. $\frac{30}{4}$ is equivalent to:
   a) $\frac{3}{4}$
   b) $\frac{7}{4}$
   c) $7\frac{2}{4}$
   d) $8\frac{2}{4}$

3. $\frac{1}{4}+\frac{1}{2}=$

4. $\frac{3}{4}+\frac{3}{8}=$

5. $1\frac{1}{8}-\frac{7}{8}=$

6. $1\frac{3}{4}+\frac{1}{8}=$

7. $\frac{1}{8}\times 4=$

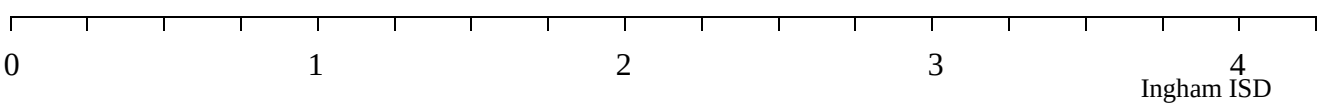
8. $10\times\frac{2}{5}=$

9. $\frac{1}{3}\times\frac{2}{5}=$

10. Circle the larger number: 1.15 1.7

11. How much is $\frac{1}{6}$ of $\frac{2}{3}$?
    a) $\frac{1}{9}$
    b) $\frac{1}{3}$
    c) $\frac{2}{9}$
    d) $\frac{12}{3}$

12. Mark the point on the number line that is the sum of $\frac{1}{2}+2\frac{3}{4}$



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13. A cupcake recipe uses $\frac{1}{4}$ of a cup of milk. You have $3\frac{1}{2}$ cups of milk. How many recipes of cupcakes can you make with that much milk?

_____

Which of the following correctly shows how you can get an answer to this problem?

a) $3\frac{1}{2}+\frac{1}{4}$

b) $3\frac{1}{2}-\frac{1}{4}$

c) $3\frac{1}{2}\times\frac{1}{4}$

d) $3\frac{1}{2}\div\frac{1}{4}$

14. You spend $12.56 at Meijer and $8.07 at Rite Aid. How much did you spend altogether?

_____

How much change will you get from $25?

_____

15. Write 0.37 as a fraction: _____

16. How much is $\frac{4}{5}$ as a decimal number?

_____

17. 0.23 x 25 = _____

18. $\frac{2}{3}\div\frac{1}{6}$ = _____

19. If gas costs $3.49 per gallon, how many gallons can you buy for $20?

a) 5.3

b) 5.7

c) 23.49

d) 69.8

20. If 8 people share 50 hot dogs equally, how many hot dogs does each person get? Give your answer as a mixed number.

_____

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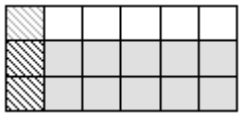
Answers and coding

1) d	Mixed number and improper fraction equivalents
2) c The answer is not reduced. If a student writes in $7\frac{1}{2}$, that is also correct.	Mixed number and improper fraction equivalents
3) $\frac{3}{4}$	Adding fractions where one denominator is a multiple of the other. The work should show an understanding of converting the 1/2 into 2/4 in order to add. 5.NF.1
4) $\frac{9}{8}$ or $1\frac{1}{8}$ Either answer is acceptable.	Adding fractions where one denominator is a multiple of the other, with result greater than 1. Converting between improper fractions and mixed numbers is an important proficiency, tested in items #1 and #2. 5.NF.1
5) $\frac{2}{8}$ or $\frac{1}{4}$ Either answer is acceptable. Several solution methods are possible.	Subtracting mixed numbers with like denominators. Subtracting across a whole number is often a challenge. 4.NF.3
6) $1\frac{7}{8}$	Adding mixed numbers where one denominator is a multiple of the other. 5.NF.1
7) $\frac{4}{8}$ or $\frac{1}{2}$ Either answer is acceptable. Several solution methods are possible.	Multiplying a fraction times a whole number. This can be learned as repeated adding of 1/8, hopping on the number line, or placing 4 "1/8" fraction pieces together. 5.NF.4
8) 4 or $\frac{20}{5}$ Either answer is acceptable.	Multiplying a whole number by a fraction (taking a fraction of a whole number). This could be read as 2/5 of 10, and figured out by taking 1/5 of 10 (= 2) then taking 2 of those (= 4). It can be shown visually by breaking 10 into fifths, then counting 2 of them. 5.NF.4
9) $\frac{2}{15}$	Multiplying fractions (answer is not reducible). This can be calculated using the standard algorithm or by using an area drawing (see the key for item #11).
10) 1.7	Comparing tenths and hundredths. A misconception might be that since 15 is larger than 7, then 1.15 is larger than 1.7. 4.NF.7
11) a. If the student writes in 2/18, that is also acceptable.	Multiplication of two fractions. It can be accomplished either by using the algorithm or by making a rectangle (area) model, as shown below:  Or by using a strip diagram that divides 2/3 into sixths. 5.NF.6
12) A point at $3\frac{1}{4}$ should be marked.	Addition of fractions (including mixed numbers) with representation on the number line. Students might solve this just by counting up on the number line rather

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	than using a formal algorithm.
13) 14 recipes, d	There are 14 one-fourth cups in 3 1/2 cups since there are 4 in each full cup: 12 in 3 full cups, two more in 1/2 cup. This can be solved by counting, as shown, or by drawing and counting. 6.NS.1 This is a typical division situation asking how many of one number go into another number.
14) $20.63, $4.37	Adding decimal numbers to hundredths. Subtracting a decimal number to hundredths from a whole number. 5.NBT.7, 6.NS.3 This question could be a two-step problem, but was purposefully separated into individual steps to scaffold the problem-solving.
15) $\frac{37}{100}$	Knowing fraction equivalent of decimals to hundredths. 4.NF.6
16) 0.8	Finding decimal equivalents of fractions with denominators other than 10 or 100, knowing that a fraction is a division statement.
17) 5.75	Multiplying a decimal by a whole number. 5.NBT.7, 6.NS.3 Students are taught two ways to calculate these: 1) the traditional algorithm that involves counting and moving decimal places; 2) to estimate the answer and use that to place the decimal point after the multiplication is done.
18) 4	Dividing a fraction by a fraction. As with item #12, this can be solved by asking How many 1/6's are in 2/3 and using a visual representation. It can also be solved by inverting and multiplying (the traditional algorithm) or it can also be solved by finding a common denominator and the dividing the numerators. 6.NS.1
19) b. The answer is rounded.	Division by a decimal. 5.NBT.7, 6.NS.3 This could also be solved by guess and check, since it's a multiple choice problem. It requires students to understand the problem structure that calls for division, as well as doing the procedure.
20) $6\frac{2}{8}$ or $6\frac{1}{4}$. Also check whether the student knows to divide to get the answer.	Division that results in a mixed number. 5.NF.3 This problem requires students to recognize that division is needed to find the answer.