



Warm Up Grade 8

January 15, 2020



Evaluate.

$$\begin{aligned}
 1) \quad & 2\frac{5}{6} + \frac{5}{8} \\
 & \hookrightarrow \frac{17}{6} + \frac{5}{8} \\
 & = \frac{17 \times 4}{6 \times 4} + \frac{5 \times 3}{8 \times 3} \\
 & = \frac{68}{24} + \frac{15}{24} \quad \text{Need C.D} \\
 & = \frac{83}{24} \\
 & = 3\frac{11}{24}
 \end{aligned}$$

$$\begin{aligned}
 2) \quad & 3\frac{1}{8} - 1\frac{1}{4} \\
 & = \frac{25}{8} - \frac{5}{4} \\
 & = \frac{25}{8} - \frac{10}{8} \\
 & = \frac{15}{8} \\
 & = 1\frac{7}{8}
 \end{aligned}$$

sheet 153 - Adding/subtracting Mixed Numbers Homework Solutions

$$\begin{aligned} 1. \quad & 2\frac{3}{10} + 1\frac{1}{10} \\ & = 3\frac{4}{10} \\ & = 3\frac{2}{5} \end{aligned}$$

$$\begin{aligned} b) \quad & 1\frac{3}{5} + \frac{4}{5} \\ & 1\frac{7}{5} \quad \frac{7}{5} = 1\frac{2}{5} \\ & 2\frac{2}{5} \end{aligned}$$

$$\begin{aligned} c) \quad & 2\frac{2}{3} + 1\frac{1}{4} \\ & 2+1 + \frac{2}{3} + \frac{1}{4} \\ & 3 + \frac{8}{12} + \frac{3}{12} \\ & 3\frac{11}{12} \end{aligned}$$

$$\begin{aligned} d) \quad & 6\frac{3}{4} + 2\frac{1}{2} \\ & 6\frac{3}{4} + 2\frac{2}{4} \\ & 8\frac{5}{4} \\ & 9\frac{1}{4} \end{aligned}$$

$$\begin{aligned} e) \quad & 8\frac{2}{5} + 2\frac{3}{10} \\ & \frac{42}{5} + \frac{23}{10} \\ & \frac{84}{10} + \frac{23}{10} \\ & \frac{107}{10} \end{aligned}$$

$$\begin{aligned} f) \quad & 1\frac{7}{12} + 2\frac{3}{5} \\ & 1+2 + \frac{7}{12} + \frac{3}{5} \\ & 3 + \frac{35}{60} + \frac{36}{60} \\ & 3\frac{71}{60} = 4\frac{11}{60} \\ & 3 + 1\frac{11}{60} \end{aligned}$$

$$\begin{aligned} g) \quad & 5\frac{2}{5} + 1\frac{3}{5} \\ & 6\frac{5}{5} \\ & = 7 \end{aligned}$$

$$\begin{aligned} h) \quad & 3\frac{4}{5} + 4\frac{3}{4} \\ & 3+4 + \frac{4}{5} + \frac{3}{4} \\ & 7\frac{20}{20} + \frac{15}{20} \\ & 7\frac{31}{20} \\ & 8\frac{11}{20} \end{aligned}$$

$$\begin{aligned} i) \quad & 2\frac{2}{3} + 1\frac{7}{10} \\ & 2\frac{20}{30} + 1\frac{21}{30} \\ & 3\frac{41}{30} \\ & 4\frac{11}{30} \end{aligned}$$

Sheet 153 - Adding/subtracting Mixed Number Homework Solutions

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

$$\underbrace{1\frac{3}{4} + \frac{1}{4}}_2 + 2\frac{1}{2}$$

$$\underbrace{2 + 2\frac{1}{2}}_{4\frac{1}{2}}$$

or

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

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

$$3 + 1 + \frac{1}{2}$$

$$4\frac{1}{2}$$

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

$$\frac{7}{4} + \frac{1}{4} + \frac{5}{2}$$

$$= \frac{7}{4} + \frac{1}{4} + \frac{10}{4}$$

$$= \frac{18}{4}$$

$$= 4\frac{2}{4} \text{ Reduce}$$

$$= 4\frac{1}{2}$$

$$8 \times \frac{10}{8} - \frac{7}{8}$$



Not the same Denominator

$$\frac{10}{9} - \frac{7}{8}$$
$$9 \frac{8}{8} - \frac{7}{8}$$
$$9 \frac{1}{8}$$

$$= \frac{80}{8} - \frac{7}{8}$$

$$= \frac{73}{8}$$

$$= 9 \frac{1}{8}$$

2

$$b) 1\frac{9}{10} + 3\frac{1}{2} + 2\frac{3}{5}$$

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

$$6\frac{20}{10}$$

$$6 + 2$$

$$8$$

$$\text{OR } 1\frac{9}{10} + 3\frac{1}{2} + 2\frac{3}{5}$$

$$\frac{19}{10} + \frac{35}{10} + \frac{26}{10}$$

$$\frac{80}{10} = 8$$

$$\begin{aligned}
 & 2 \quad c) 2\frac{5}{12} + 1\frac{2}{3} + 4\frac{1}{2} \\
 & = 2\frac{5}{12} + 1\frac{8}{12} + 4\frac{6}{12} \\
 & = \underbrace{2+1+4}_{7} + \underbrace{\frac{5}{12} + \frac{8}{12} + \frac{6}{12}}_{\frac{19}{12}} \\
 & = 7 + 1\frac{7}{12} \\
 & = 8\frac{7}{12}
 \end{aligned}$$

OR

$$2\frac{5}{12} + 1\frac{2}{3} + 4\frac{1}{2} \\
 \frac{29}{12} + \frac{5 \times 4}{3 \times 4} + \frac{9 \times 6}{2 \times 6}$$

$$\frac{29}{12} + \frac{20}{12} + \frac{54}{12}$$

$$= \frac{103}{12}$$

$$= 8\frac{7}{12}$$

$$\begin{aligned}
 & 3\frac{3}{4} + \frac{1}{3} + 2\frac{1}{2} \\
 & \frac{15}{4} + \frac{1}{3} + \frac{5}{2}
 \end{aligned}$$

OR

$$\frac{45}{12} + \frac{4}{12} + \frac{30}{12}$$

$$\frac{79}{12}$$

$$= 6\frac{7}{12}$$

$$\begin{aligned}
 & 2 \quad d) 3\frac{3}{4} + \frac{1}{3} + 2\frac{1}{2} \\
 & 3\frac{9}{12} + \frac{4}{12} + 2\frac{6}{12} \\
 & 5\frac{19}{12} \\
 & 6\frac{7}{12} \quad (\frac{79}{12})
 \end{aligned}$$

sheet 153 - Adding/subtracting Mixed Number **Homework Solutions**

3 a) $2\frac{3}{5} - 1\frac{1}{4}$
 $2\frac{12}{20} - 1\frac{5}{20}$
 $1\frac{7}{20}$

b) $1\frac{2}{3} - 2$
 $1\frac{4}{6} - 2\frac{6}{6}$
 $1\frac{4}{6} - 2\frac{6}{6}$

*c) $3 - 2\frac{1}{6}$
 $\frac{6}{6} - 1\frac{1}{6}$
 $\frac{5}{6}$

d) $22\frac{1}{6} - 4\frac{5}{6}$
 $21\frac{7}{6} - 4\frac{5}{6}$
 $17\frac{2}{6}$ or $17\frac{1}{3}$ ($\frac{52}{3}$)

$\frac{132}{6} - \frac{29}{6}$
 $\frac{103}{6}$ ✓
 $17\frac{2}{6}$
 $17\frac{1}{3}$

$22\frac{1}{6} - 4\frac{5}{6}$
 $22 - 4 = 18$
 $1\frac{1}{6} - \frac{5}{6}$
 17
 17
 $17\frac{2}{6}$
 $17\frac{1}{3}$

can't be done
 So need to borrow from whole

sheet 153 - Adding/subtracting Mixed Number Homework Solutions

4. a) $2\frac{3}{4} + 3\frac{3}{8} + 2\frac{1}{2}$

$2\frac{6}{8} + 3\frac{3}{8} + 2\frac{4}{8}$

$7\frac{13}{8}$

$7 + 1\frac{5}{8} = 8\frac{5}{8}$ (6/9)

b) $10 - 8\frac{5}{8}$

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

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

5 a) $1\frac{5}{6} + 2\frac{1}{6}$
 $1\frac{5}{6} + 2\frac{1}{6}$
 $3\frac{6}{6}$ (11/6)

b) $2\frac{1}{6} - 1\frac{5}{6}$
 $2\frac{1}{6} - 1\frac{5}{6}$
 $1\frac{1}{6} - 1\frac{5}{6}$
 $0\frac{1}{6} - 0\frac{5}{6}$
 $0\frac{17}{30}$

$2 - 1 = 1$
 $1 - 1 = 0$

$\frac{1 \times 5}{6 \times 5} - \frac{3 \times 6}{5 \times 6}$
 $\frac{5}{30} - \frac{18}{30}$
 Need borrow
 $1\frac{5}{30} - 1\frac{18}{30}$
 $\frac{35}{30} - \frac{18}{30} = \frac{17}{30}$

c) $5 - 3\frac{2}{3}$
 $2 - 1\frac{2}{3}$
 $1\frac{2}{3} - 1\frac{2}{3}$
 $0\frac{0}{30}$

add to you notes

Finding a Fraction of a Whole Number

Often we can find a fraction of a whole number mentally, by using a unit fraction.

A unit fraction is a fraction that has a numerator of 1.

ex. $\frac{1}{5}$, $\frac{1}{12}$, $\frac{1}{8}$, $\frac{1}{3}$

What does "of" mean in math?

★ "of" means to multiply

★ ex 1) $\frac{1}{6}$ of 18 = 3 → like ÷ by 6

You can find $\frac{1}{6}$ of 18 by dividing 18 by 6
 $\frac{1}{6}$ of 18 = ?

★ ex 2) $\frac{1}{5}$ of 45
 Find $\frac{1}{5}$ of 45 by dividing 45 by 5
 $\frac{1}{5}$ of 45 =

Ex) $\frac{1}{5}$ of 45 = 9
 ↳ like ÷ 5

ex 3) $\frac{1}{12}$ of 36
 Find $\frac{1}{12}$ of 36 by dividing 36 by 12
 $\frac{1}{12}$ of 36 =

$\frac{1}{12}$ of 36 = 3

You try

$$\star \frac{1}{2} \text{ of } 26 = 13$$

Same as $26 \div 2$

$$\star \frac{1}{3} \text{ of } 30 = 10$$

Same as $30 \div 3$

$$\star \frac{1}{6} \text{ of } 60 = 10$$

$$\frac{1}{8} \text{ of } 40 = 5$$

$$\frac{1}{11} \text{ of } 55 = 5$$

You try

Then you can use the unit fractions, to help you get other answers

#1) $\frac{2}{5}$ of 45
 $\frac{1}{5}$ of 45 =
 so $\frac{2}{5}$ of 45 =

Ex 1) $\frac{2}{5}$ of 45 = 18
 $\frac{1}{5}$ of 45 = 9

#2) $\frac{7}{9}$ of 63
 $\frac{1}{9}$ of 63 =
 so $\frac{7}{9}$ of 63 =

2) $\frac{7}{9}$ of 63 = 49
 $\frac{1}{9}$ of 63 = 7

3) $\frac{6}{11}$ of 88 = 48
 $\frac{1}{11}$ of 88 = 8

like ÷ by 11

Find the value of each BUT show work

a) $\frac{3}{7}$ of 28 = 12

$\frac{1}{7}$ of 28 = 4

\rightarrow like $\div 7$

(Note: Green arrows labeled 'x3' point from the 4 to the 12, indicating that 4 is multiplied by 3 to get 12.)

b) $\frac{4}{5}$ of 20 = 16

$\frac{1}{5}$ of 20 = 4

(Note: Red arrows labeled 'x4' point from the 4 to the 16, indicating that 4 is multiplied by 4 to get 16.)

Sometimes you will estimate the fraction of the whole number. And you estimate when the unit fraction does not give a whole number.

For example $\frac{1}{3}$ of 20 will not be a whole number

But you can estimate $\frac{1}{3}$ of 21 = 7

Estimate the following:

(a) $\frac{1}{8}$ of 50

Est. $\frac{1}{8}$ of 48

6

(b) $\frac{5}{7}$ of 36

Est. $\frac{1}{7}$ of 35 = 5

$\frac{5}{7}$ of 35 = 5 x 5

= 25

(c) $\frac{9}{10}$ of 72

Est. $\frac{1}{10}$ of 70 = 7

$\frac{9}{10}$ of 70 = 9 x 7

= 63

Sometimes when estimating you change the fraction instead of the number, but most times its easier to change the number.

Class/Homework

Power Builder WORKSHEET



Mental Math - Lesson 29

Power Builder A

1. $\frac{1}{4}$ of 12 = 3

2. $\frac{1}{5}$ of 35 = 7

3. $\frac{1}{8}$ of 40 = 5

4. $\frac{1}{3}$ of 45 = 15

5. $\frac{1}{7}$ of 28 = 4

6. $\frac{3}{4}$ of 28 = 3×4
= 12

7. $\frac{1}{5}$ of 45 = 9

8. $\frac{2}{5}$ of 45 = 9×2
= 18

9. $\frac{1}{10}$ of 70 = 7

10. $\frac{3}{10}$ of 70 = 3×7
= 21

11. $\frac{4}{5}$ of 20

$\frac{1}{5}$ of 20 = 4

$\frac{4}{5}$ of 20 = $4 \times 4 = 16$

12. $\frac{3}{7}$ of 42

$\frac{1}{7}$ of 42 = 6

$\frac{3}{7}$ of 42 = 6×3
= 18

13. $\frac{3}{4}$ of 100

$\frac{1}{4}$ of 100 = 25

$\frac{3}{4}$ of 100 = 3×25
= 75

14. $\frac{2}{3}$ of 90

$\frac{1}{3}$ of 90 = 30

$\frac{2}{3}$ of 90 = 60

15. $\frac{3}{5}$ of 100

$\frac{1}{5}$ of 100 = 20

$\frac{3}{5}$ of 100 = 20×3
= 60

16. $\frac{5}{8}$ of 40

$\frac{1}{8}$ of 40 = 5

$\frac{5}{8}$ of 40 = $5 \times 5 = 25$

17. $\frac{2}{3}$ of 600

$\frac{1}{3}$ of 600 = 200

$\frac{2}{3}$ of 600 = 2×200
= 400

18. $\frac{3}{4}$ of 200

$\frac{1}{4}$ of 200 = 50

$\frac{3}{4}$ of 200 = 3×50
= 150

19. $\frac{4}{5}$ of 200

$\frac{1}{5}$ of 200 = 40

$\frac{4}{5}$ of 200 = 4×40
= 160

20. $\frac{2}{3}$ of 450

$\frac{1}{3}$ of 450 = 150

$\frac{2}{3}$ of 450 = 2×150
= 300

 $\frac{1}{4}$ $\frac{1}{4}$ $\frac{1}{4}$

4	4	4				
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Attachments

Grade 8 Mental Math POWER BUILDER PDF.pdf