PERCENTS

Percent - is the number of parts per 100; the numerator of a fraction with a denominator of 100.

Write the following as fractions (in lowest terms)

Example 1:	Example 2:	Example 3:
13% $= \dfrac{13}{100}$	24% $= \dfrac{24}{100}$ GCF=4 $= \dfrac{6}{25}$	125% $= \dfrac{125}{100}$ GCF:25 $= \dfrac{5}{4}$

Write each percent as a decimal

Example 4:	Example 5:	Example 6:
20% $= 0.20$	2% $= 0.02.$ $= 0.02$	134% $= 1.34.$ $= 1.34$

PERCENT PROBLEMS

'of' in math means to multiply
'out of' in math means to divide

Example 7: There were 25 apples. Molly took 20% of the apples home. How many apples did Molly take? How many apples did Molly take? $25 \times 0.2 = 5$ ∴ Molly has 5 apple.	Example 8: Stephen spent 40% of his birthday money. He was given $145. How much does he have left? • How much does he have left? $145 \times (100-40)\% = 145 \times 60\%$ $= 145 \times 0.6$ $= 87.$ ∴ the has $87 left.
Example 9: Nadiya achieved 45 out of 60 on her math test. What is this as a percent? $\dfrac{45}{60} \times 100 = 75\%$	Example 10 An outfit is $34.95 and is on sale for 25% off. Taxes on this item are 13%. Calculate the total cost to purchase this item. Price before tax : $34.95 × (100-25)% $= \$34.95 \times 75\%$ $= \$34.95 \times 0.75$ $= \$26.21$ Taxed Price $= \$26.21 \times (100+13)\%$ $= \$26.21 \times (113)\%$ $= \$29.62$ ∴ The total cost is $29.62

Practice: Percent

1. Write each percent as a decimal
a. 45%   b. 67%   c. 6%   d. 1%   e. 100%   f. 150%   g. 9.5%   h. 0.5%

$=0.45$ $=0.67$ $=0.06$ $=0.01$ $=1$ $=1.5$ $=0.095$ $=0.005$

2. Write each decimal as a percent
a. 0.23   b. 0.56   c. 0.79   d. 0.05   e. 0.235   f. 1.2   g. 0.006   h. 0.01

$=23\%$ 56% 79% 5% 23.5% 120% 0.6% 1%
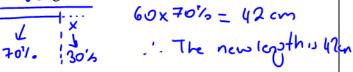
3. Write each fraction as a percent (to 1d.p)
a. $\dfrac{20}{100}$ b. $\dfrac{23}{50}$ c. $\dfrac{3}{4}$ d. $\dfrac{4}{9}$ e. $\dfrac{4}{5}$ f. $\dfrac{1}{3}$ g. $2\dfrac{2}{3}$ h. $\dfrac{3}{8}$

$=20\%$ $=46\%$ $=75\%$ $=44.4\%$ $=80\%$ $=33.3\%$ $=\dfrac{8}{3}$ $=37.5\%$
                                                                                                                                        $=266.7\%$

4. Evaluate:
a. 20 % of 250   b. 5% of $7.90   c. 8% of $400   d. 13% of 50 000
$250 \times 20 \div 100$ $=7.90 \times 0.05$ $=400 \times 8 \div 100$ $=50000 \times 13 \div 100$
                                    $=0.40$ $=32$ $=6500$

5. Express as a percent
a. 6 out of 10   b. 37 out of 50   c. 15 out of 60   d. 8 out of 80
$\dfrac{6}{10} = \dfrac{60}{100} = 60\%$ $\dfrac{37}{50} = \dfrac{74}{100} = 74\%$ $\dfrac{15}{60} = 25\%$ $\dfrac{8}{80} = 10\%$

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6. Sonia has a picture that is 60cm long. She asked the photo shop to reduce the length by 30%. What will the new length be?

$60 \times 70\% = 42$ cm

$\therefore$ The new length is 42cm

7. Yangyang got 64 hits in 91 times at bat. What percent of the time did she get a hit? (round to 1d.p.)

$\dfrac{64}{91} = 70.3\%$

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8. A calculator has a price of $260. The retailer first discounts 10% and then adds sales tax on 9%. Can we just do one calculation and discount 1%? Explain and show mathematical solution.

SOLUTION 1
$260 \times 0.90 = 234$
$234 \times 109\% = \$255.06$
$\therefore$ Final price is 255.06

SOLUTION 2
$260 \times 99\% = \$257.4$
$\therefore$ Final price is 257.4

9. A dealer bought a used car for $6000. He marked the price up by 50% from what he paid for it. When he couldn't sell the car at this price, he marked it down by 40%. The car was bought. Did he make or lose money? How much?

Marked up \$ $= 6000 \times 150\% = \$9000$
Marked down \$ $= 9000 \times 60\% = \boxed{\$5400}$
Original \$ − Find \$ $= 6000 - 5400$
                                    $= \$600$
$\therefore$ There is a loss of $600.

Answers: 1)0.45; 0.67; 0.06; 0.01; 1.0; 1.5; 0.095; 0.005;   2) 23%; 56%; 79%; 5%; 23.5%; 120%; 0.6%; 1%
3) 20%; 46%; 75%; 44.4%; 80%; 33.3%; 266.7%; 37.5%   4) 50; $0.40; $32; 6500
5) 60%; 74%; 25%; 10%   6) 42cm long,   7) 70.3%
8) [1%disc=$257.40] [10%dis+9%tax=$255.06] They are not the same. You must do separately.   9)Loss of $600