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In a move towards offering an even more versatile spread of resources, some of our worksheets feature _interactive fields_ that can be filled in on computers and smart devices, without having to print the page. Follow the guidance in the next column for a smooth, stress-free means of accessing this content using free-to-download PDF reading software.
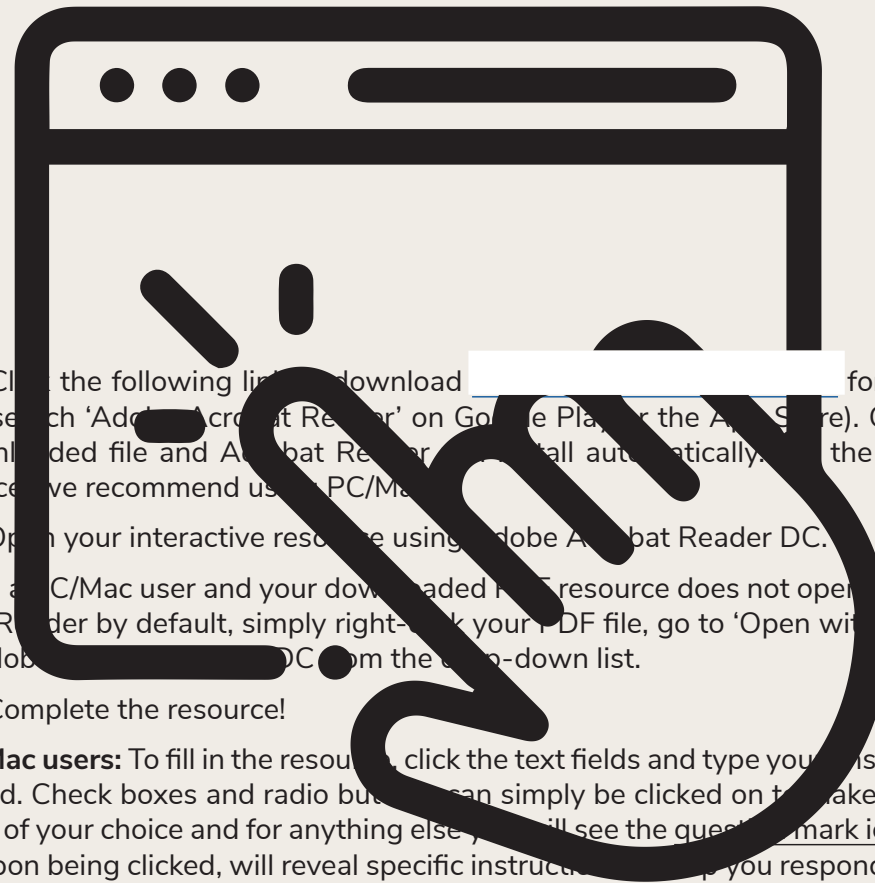
Step 1: Click the following link to download [_____] for PC/Mac (or search 'Adobe Acrobat Reader' on Google Play or the App Store). Open the downloaded file and Acrobat Reader will install automatically. For the best experience we recommend using a PC/Mac.

Step 2: Open your interactive resource using Adobe Acrobat Reader DC.

If you are a PC/Mac user and your downloaded PDF resource does not open using Acrobat Reader by default, simply right-click your PDF file, go to 'Open with' and select Adobe Acrobat Reader DC from the drop-down list.

Step 3: Complete the resource!

For PC/Mac users: To fill in the resource, click the text fields and type your answers as needed. Check boxes and radio buttons can simply be clicked on to make the selection of your choice and for anything else you will see the question mark icon which, upon being clicked, will reveal specific instructions to help you respond to the corresponding question or activity. When you are finished with the resource, go to File > Save As... and save your file in a memorable location.

For smart device users: To fill in the resource, follow the same process as described above. When you are finished, simply press the back button in the top left of the appscreen and your PDF will save automatically.

Remember: Saving your PDF will overwrite the original file, so be sure to create a copy before starting if you wish to keep a blank copy of the resource on your device.

We hope you have found this information useful. If you experience any problems in following the instructions above, please contact the Beyond team at [_____] and we will do our best to help with your query.

Percentage Increase and Decrease **Answers**

1. Write down the percentage multipliers for:

   a. a 10% increase

   100 + 10 = 110%

   110 ÷ 100 = 1.1

   b. a 17% increase

   100 + 17 = 117%

   117 ÷ 100 = 1.17

   c. a 10% decrease

   100 – 10 = 90%

   90 ÷ 100 = 0.9

   d. a 32% decrease

   100 – 32 = 68%

   68 ÷ 100 = 0.68

   e. a 2.5% increase

   100 + 2.5 = 102.5%

   102.5 ÷ 100 = 1.025

   f. a 1.2% decrease

   100 – 1.2 = 98.8%

   98.8 ÷ 100 = 0.988

2.

   a. Increase 210 by 5%

   1.05 × 210 = 220.5

   b. Decrease 74 by 10%

   0.9 × 74 = 66.6

   c. Increase 19 by 25%

   1.25 × 19 = 23.75

   d. Decrease 86 by 2.1%

   0.979 × 86 = 84.194

   e. Increase 97 by 50%

   1.5 × 97 = 145.5

   f. Decrease 130 by 99%

   0.01 × 130 = 1.3

3. The price of a car service is $320. It increases by 15%. Work out the new price of a car service.

   1.15 × 320 = $368

4. A pair of jeans cost $32. They are reduced in a sale by 12%. Work out the sale price of the jeans.

   0.88 × 32 = $28.16

5. I invest $800 in a bank account which pays 1.25% per annum.

   a. Work out how much money I will have in the account after one year.

   1.0125 × 800 = $810

   b. Work out how much money I will have in the account after two years. Hint: use the amount after year 1 as the original.

   1.0125 × 810 = $820.13 (correct to the nearest cent)

Challenge

Grace sees a special offer in a shop.

> **Special Offer**
>
> Games Console $280
>
> Game $50
>
> 6% discount if bought together

Work out how much money she will save if she buys the items together instead of separately.

280 + 50 = $330

0.94 × 330 = $310.20

330 – 310.20 = $19.80

Percentage Increase and Decrease

Calculators Allowed

Prior Knowledge:

Before attempting this sheet, students should be able to calculate a percentage increase/decrease by calculating the percentage and then adding to / subtracting from the original amount.

Percentage Multipliers

Percentage multipliers can be used to find percentages of an amount.

For example:

Find 7% of 30.

7% as a decimal is 7 ÷ 100 = 0.07

This is the multiplier we use to find 7% of 30.

0.07 × 30 = 2.1

Percentage Increase and Decrease

To increase or decrease by a percentage, begin by either adding or subtracting the relevant percentage from 100%, then find the multiplier.

Example 1

Increase 50 by 20%.

Since we are increasing, we want to add 20% to 100%.

100 + 20 = 120%

We need to find 120% of 50.

120 ÷ 100 = 1.2

This is the multiplier we use to find 120% of 50.

1.2 × 50 = 60

Example 2

A video game usually costs $40. It is reduced by 6% in the sale. Work out the sale price of the game.

This time, we are decreasing the amount so we want to subtract 6% from 100%.

100 − 6 = 94%

We need to find 94% of $40.

94 ÷ 100 = 0.94

This is the multiplier we use to find 94% of 40.

0.94 × 40 = $37.60

Note that, when we are working with money, we give our answers correct to 2 decimal places.

Your Turn

1. Write down the percentage multipliers for:

   a. a 10% increase

   c. a 10% decrease

   e. a 2.5% increase

   b. a 17% increase

   d. a 32% decrease

   f. a 1.2% decrease

2.

   a. Increase 210 by 5%

   c. Increase 19 by 25%

   e. Increase 97 by 50%

   b. Decrease 74 by 10%

   d. Decrease 86 by 2.1%

   f. Decrease 130 by 99%

3. The price of a car service is $320. It increases by 15%. Work out the new price of a car service.

4. A pair of jeans cost $32. They are reduced in a sale by 12%. Work out the sale price of the jeans.

5. I invest $800 in a bank account which pays 1.25% per annum.

   a. Work out how much money I will have in the account after one year.

   b. Work out how much money I will have in the account after two years. Hint: use the amount after year 1 as the original.

Challenge

Grace sees a special offer in a shop.

Special Offer

Games Console $280

Game $50

6% discount if bought together

Work out how much money she will save if she buys the items together instead of separately.

Percentage Increase and Decrease

Calculators Allowed

Percentage Multipliers

Percentage multipliers can be used to find percentages of an amount.

For example:

Find 7% of 30.

7% as a decimal is 7 ÷ 100 = 0.07

This is the multiplier we use to find 7% of 30.

0.07 × 30 = 2.1

Percentage Increase and Decrease

To increase or decrease by a percentage, begin by either adding or subtracting the relevant percentage from 100%, then find the multiplier.

Example 1

Increase 50 by 20%.

Since we are increasing, we want to add 20% to 100%.

100 + 20 = 120%

We need to find 120% of 50.

120 ÷ 100 = 1.2

This is the multiplier we use to find 120% of 50.

1.2 × 50 = 60

Example 2

A video game usually costs $40. It is reduced by 6% in the sale. Work out the sale price of the game.

This time, we are decreasing the amount so we want to subtract 6% from 100%.

100 – 6 = 94%

We need to find 94% of $40.

94 ÷ 100 = 0.94

This is the multiplier we use to find 94% of 40.

0.94 × 40 = $37.60

Note that, when we are working with money, we give our answers correct to 2 decimal places.

Your Turn

1. Write down the percentage multipliers for:

    a. a 10% increase

    _____

    _____

    b. a 17% increase

    _____

    _____

    c. a 10% decrease

    _____

    _____

    d. a 32% decrease

    _____

    _____

    e. a 2.5% increase

    _____

    _____

    f. a 1.2% decrease

    _____

    _____

2.

    a. Increase 210 by 5%

    _____

    _____

    b. Decrease 74 by 10%

    _____

    _____

    c. Increase 19 by 25%

    _____

    _____

    d. Decrease 86 by 2.1%

    _____

    _____

    e. Increase 97 by 50%

    _____

    _____

    f. Decrease 130 by 99%

    _____

    _____

3. The price of a car service is $320. It increases by 15%. Work out the new price of a car service.

    _____

    _____

4. A pair of jeans cost $32. They are reduced in a sale by 12%. Work out the sale price of the jeans.

    _____

    _____

5. I invest $800 in a bank account which pays 1.25% per annum.

    a. Work out how much money I will have in the account after one year.

    _____

    b. Work out how much money I will have in the account after two years. Hint: use the amount after year 1 as the original.

    _____

    _____

Challenge

Grace sees a special offer in a shop.

> **Special Offer**
>
> Games Console $280
>
> Game $50
>
> 6% discount if bought together

Work out how much money she will save if she buys the items together instead of separately.

_____

_____

_____

_____