Food packaging

# Hold the Anchovies!

Pizza's a pretty popular take away meal. You simply phone the pizza company, place an order and expect your food PDQ (pretty damn quick). You also expect the food to be hot - warm at the very least.

But the pizza delivery person may have to ride their moped for about half an hour. That's loads of time for the pizza to turn cold. So the pizza has to come in an insulated container.

## What you have to do

A brand new pizza company - *Pizza the Action* - is opening up in your neighbourhood. You've been asked by the company to design its pizza box.

You've also been commissioned to design an insulated 'carrier' box that will attach to the pizza delivery person's moped. Together they should keep their contents nice and hot. The company's head of PR has sent you a **design brief**. It details all the company's requirements.

*Pizza the Action*
*Public Relations*

Dear Sir/Madam,

### Re: Design Brief

*Pizza the Action* wants you to produce a pizza box and pizza box carrier that will keep any of its three pizzas - 12 inch, 10 inch or seven inch - from getting cold in the time it would take to deliver them. The company delivers in a five mile radius.

The pizza box carrier should be able to carry up to eight pizza boxes.

The pizza boxes should be low cost and they will need to be mass produced. They should display a *Pizza the Action* logo (you can design this if you like, or simply indicate where it would go) and a warning sign that the contents might be hot. They need to be made of non-toxic material.

The carrier should be fairly heavy-duty - *Pizza the Action* doesn't want to replace the carriers for at least a couple of years. *Pizza the Action* currently has a fleet of ten mopeds. However, it expects to expand in the next six months, in which case it'll need about five more mopeds.

The carriers also need to display the *Pizza the Action* logo. They should be resistant to moisture, corrosion and fuels. They should also be airtight to keep out fumes.

The pizzas should arrive undamaged, so the boxes and carriers need to withstand the bumps you'd experience riding a moped through urban traffic. It's also worth considering that delivery people sometimes drop their goods!

Pizzas vary in thickness but are never more than 25 mm thick.

The empty pizza boxes need to be stored in as little space as possible.

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# How to set about it ...

## What exactly do they want?

1. Draw a table like the one below (you may need more rows). Use the first column to list the **key design features** from the **design brief**. In the second column, "Initial thoughts", make a few notes about what you'll have to bear in mind as you begin to come up with possible solutions.

| Key design feature | Initial thoughts |
|---|---|
| | |
| | |
| | |
| | |

2. You can now write your **design specification**. This should explain exactly what's required, and the implications of each design feature.

## Generating ideas and shortlisting

3. Using the internet, library and/or resource centre, carry out some research into pizza boxes. Here are a few places you might like to try:

   http://www.correllconcepts.com/ (an American company that calls itself a 'Pizza Profit-building Center', specialising in pizza packaging design)

   http://www.fridge-e.com/ (a company specialising in cool boxes)

   You could also visit a few pizza places and check out what their boxes are like.

4. Produce a number of **design ideas** using simple freehand sketches to try to visualise them. Remember you're designing the pizza box AND the pizza box carrier.
5. Shortlist three of your ideas, explaining the decisions behind your choices. Even at this stage you should be pretty sure your design ideas will work. Scientific principles will help, for example, you should know about material properties such as thermal conductance and impact resistance. Knowledge of the relationship between speed, time and distance should help you estimate a travelling time for delivering up to eight pizzas.

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# And then there was one ...

6. You must now work out the pros and cons of your three design ideas. There are a number of ways to help you work these out. A few of them are:
    - You could carry out simple tests on scale models of particular components. In some cases you may want to test a scale model of the whole structure. For example, you may want to check the pizza boxes fit into the pizza box carrier without moving around too much.
    - Think about costs. Which of your designs would be most expensive to manufacture?
    - What's the rough life expectancy of your different pizza box carriers? Is one much more hard-wearing than another?
    - Do any of your designs have more than one use? You've designed a pizza box carrier for transporting pizza and keeping it warm. But could this be used as, say, a picnic basket? (with a simple modification and a change of marketing you might be able to sell your designs to a wider client base).
7. Having weighed up the pros and cons, you've probably got a decent idea which design you think is the best. But the client is the paymaster. So, to help choose a final **design solution,** you should get feedback (comments and suggestions) from an expert who understands your client's needs.
    - Make 2-D and 3-D drawings and/or scale models of your three design ideas. These should be of good enough quality to allow you (and anybody else for that matter) to visualise exactly what your pizza boxes and carriers will look like.
    - Present your designs to the expert, and write down their comments and suggestions. (but if you're adamant one design is better than another, make sure you can explain why - you have to give the client what they want, but YOU are the designer!).
    - Consider the expert feedback and decide what modifications you need to make, if any, to make sure your designs meet the client's needs.
8. Choose your final design solution and summarise the reasons behind the choice, including how your **design solution** fulfils the **key design features** in your **design specification**, and how you have used expert feedback.

## Presenting your solution

9. Decide on a suitable engineering drawing technique to present your final solution. Make 2-D and 3-D engineering design drawings, or use computer aided design (CAD) to produce them. Make sure you stick to engineering standards and conventions.

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# You've done the design job ...

10. You've successfully produced a **design solution** from a **design brief**. But what now? You've done the job of the designer, so you need to put your engineer's hat on. The design solution has to be turned into a **product specification** - giving the manufacturer the information needed to actually make the product.

    A product specification details all the materials needed to make a product; it includes its dimensions, tolerances and details of how the different components will be joined together.

    You need to decide which materials will be best to make your pizza boxes and the carrier. To decide which materials are best you should look back at the design brief and your initial research. You should also use databases and other resources to find out properties of materials.

    You might also want to try tests for materials, joints and finishes to show how these can vary and influence your choice for the product specification.

    COMPARATIVE TESTS