Problem Solving, Reasoning and Numeracy

Aspects of Problem Solving, Reasoning and Numeracy

Problem Solving, Reasoning and Numeracy is made up of the following aspects:
- **Numbers as Labels and for Counting** – is about how children gradually know and use numbers and counting in play, and eventually recognise and use numbers reliably, to develop mathematical ideas and to solve problems.
- **Calculating** – is about how children develop an awareness of the relationship between numbers and amounts and know that numbers can be combined to be ‘added together’ and can be separated by ‘taking away’ and that two or more amounts can be compared.
- **Shape, Space and Measures** – is about how through talking about shapes and quantities, and developing appropriate vocabulary, children use their knowledge to develop ideas and to solve mathematical problems.

What Problem Solving, Reasoning and Numeracy means for children

- Babies’ and children’s mathematical development occurs as they seek patterns, make connections and recognise relationships through finding out about and working with numbers and counting, with sorting and matching and with shape, space and measures.
- Children use their knowledge and skills in these areas to solve problems, generate new questions and make connections across other areas of Learning and Development.
How settings can effectively implement this area of Learning and Development

To give all children the best opportunities for effective development and learning in Problem Solving, Reasoning and Numeracy practitioners should give particular attention to the following areas.

### Enabling Environments

- Recognise the mathematical potential of the outdoor environment, for example, for children to discover things about shape, distance and measures, through their physical activity.
- Exploit the mathematical potential of the indoor environment, for example, enabling children to discover things about numbers, counting and calculating through practical situations such as finding out how many children are in the music area or how many story books a child has looked at today.
- Ensure that mathematical resources are readily available both indoors and outside.

### Positive Relationships

- Give children sufficient time, space and encouragement to discover and use new words and mathematical ideas, concepts and language during child-initiated activities in their own play.
- Encourage children to explore real-life problems, to make patterns and to count and match together, for example, ask, “How many spoons do we need for everyone in this group to have one?”.
- Support children who use a means of communication other than spoken English to develop and understand specific mathematical language while valuing knowledge of Problem Solving, Reasoning and Numeracy in the language or communication system that they use at home.
- Value children’s own graphic and practical explorations of Problem Solving, Reasoning and Numeracy.

### Learning and Development

- Develop mathematical understanding through all children’s early experiences including through stories, songs, games and imaginative play.
- Provide a range of activities, some of which focus on mathematical learning and some which enable mathematical learning to be drawn out, for example, exploring shape, size and pattern during block play.
- Use mathematical terms during play and daily routines.

### What do I do next?

- **Welfare requirements** are explained in full in the Statutory Framework for the Early Years Foundation Stage booklet.
- **Areas of Learning and Development** including effective practice, planning and resourcing at different stages are detailed in the Practice Guidance for the Early Years Foundation Stage booklet and on the CD-ROM.
- **Early Support** information is available on the CD-ROM under areas of Learning and Development.
- **Research and resources** are available on the CD-ROM.